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**U.S. Department of the Interior
Bureau of Land Management
Twin Falls District
Burley Field Office
Cassia County, Idaho**

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March 2006

FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED COTTEREL WIND POWER PROJECT

**AND PROPOSED RESOURCE MANAGEMENT PLAN
AMENDMENT**



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United States Department of the Interior

FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED COTTEREL WIND POWER PROJECT AND PROPOSED RESOURCE MANAGEMENT PLAN AMENDMENT

Prepared for

U.S. Department of the Interior
Bureau of Land Management
Twin Falls District
Burley Field Office
Cassia County
15 East, 200 South
Burley, Idaho 83318

Serial Number IDI-33676

On behalf of

Windland, Inc
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Boise, ID 83704

and

Shell WindEnergy, Inc.
Suite 1042
910 Louisiana
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March 2006



United States Department of the Interior

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15 East 200 South

Burley, Idaho 83318

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In Reply Refer To: IDI-33676 (ID 220)

March, 2006

Dear Interested Reader:

Enclosed for your perusal is the *Final Environmental Impact Statement for the Proposed Cotterel Wind Power Project and Proposed Resource Management Plan Amendment* (FEIS). The Applicant, Windland, Inc., in partnership with Shell Wind Energy, Inc. (a subsidiary of the Royal Dutch/Shell Group), has submitted a right-of-way application to the Bureau of Land Management, Twin Falls District, Burley Field Office (BLM), requesting to build a 190-240 megawatt, wind-powered electrical generation facility on the ridgeline of Cotterel Mountain, roughly 15 miles east of the city of Burley, and situated between the towns of Albion and Malta, located in Cassia County, Idaho.

A Proposed Resource Management Plan Amendment is included in this FEIS. The proposed project and action alternatives are not in conformance with the BLM *Cassia Resource Management Plan, 1985* (Cassia RMP) which does not allow the granting of rights-of-way in the proposed project area. Therefore, the Cassia RMP must be amended if an action alternative is selected.

Based on the analysis of the proposed action and alternatives to the proposed action, the reader is being informed that the **proposed decision is to amend the Cassia RMP by implementing Alternative C, Modified Proposed Action**. A complete description of Alternative C and all other alternatives can be found in this FEIS. In addition, the FEIS presents comments received on the DEIS/Draft Plan Amendment and associated responses to those comments.

This FEIS was prepared in accordance with the *National Environmental Policy Act, 1969* (NEPA) and with applicable laws and regulations passed subsequent to NEPA. It is intended to provide the public and agency decision makers with a complete and objective evaluation of impacts, beneficial and adverse, resulting from the Proposed Action and all reasonable alternatives.

No decision on the Proposed Plan Amendment will be made for at least 30 days after the Environmental Protection Agency (EPA) publishes its Notice of Availability (NOA) of this FEIS/Proposed Plan Amendment in the **Federal Register**. BLM regulations (43 CFR 1610.5-2) state that any person who participated in the planning process and has an interest that may be adversely affected may protest the proposed decision that would be implemented on BLM administered land. The proposed decision which may be protested is the Proposed Plan Amendment. The protest must be filed within 30 days of the date that the EPA publishes its NOA. Protests must address the proposed decision to amend the Cassia RMP. Protests regarding proposed decisions affecting BLM administered lands must be in writing and filed with the BLM Director. Protests may raise only those issues that were submitted for the record during the planning process. Email and faxed protests will not be accepted as valid protests unless the protesting party also provides the original letter by either regular or overnight mail postmarked by the close of the protest period. Under these conditions, the BLM will consider the email or faxed protest as an advance copy, and it will receive full consideration. If you wish to provide the BLM with such advance notification, please direct faxed protests to the attention of the BLM Protest Coordinator at (202)452-5112 and emails to Brenda_Hudgens-Williams@blm.gov. Please direct the follow up letters to the appropriate address provided below. To be considered complete, your protest must contain at minimum, the following information: (1) The name, mailing address, telephone number and interest of the person filing the protest; (2) a statement of the issue or issues being protested; (3) a statement of the part or parts of the Proposed Plan Amendment being protested; (4) a copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issue or issues were discussed for the record; and (5) a concise statement explaining why the Director's proposed decision is believed to be wrong. A protest merely expressing disagreement with the Director's proposed decision without providing any supporting data will not be considered a valid protest.

All written protests must be sent to one of the following addresses: Regular Mail, Director, WO-210/LS-1075, Bureau of Land Management, Attn: Brenda Hudgens-Williams, Department of the Interior, P.O. Box 66538, Washington, DC 20035, or Overnight Mail, Director, WO-210/LS-1075, Bureau of Land Management, Attn: Brenda Hudgens-Williams, Department of the Interior, 1610 L Street NW, Suite 1075, Washington, DC 20036.

To be considered timely, your protest must be postmarked no later than the last day of the protest period. Though not a requirement, it is suggested that protests be sent by certified mail, return receipt requested. You are also encouraged, but not required, to forward a copy of your protest to the project manager at the following address: Scott Barker, Project Manager, Bureau of Land Management, 15 East 200 South, Burley, Idaho 83318.

This may allow the BLM to resolve the protest through clarification of intent or discussion with the protestor. Please note that protests, including names and street addresses are available for public review and/or release under the Freedom of Information Act (FOIA). Individual respondents may request confidentiality.

contact Scott Barker at (208) 677-6

participation in this analysis

221

~~SECRET~~

[Signature]

Business and Finance
University of Maryland System

**FINAL ENVIRONMENTAL IMPACT STATEMENT
FOR THE PROPOSED COTTEREL WIND POWER PROJECT AND
PROPOSED RESOURCE MANAGEMENT PLAN AMENDMENT
BURLEY, CASSIA COUNTY, IDAHO**

Lead Agency: U.S. Department of the Interior
Bureau of Land Management
Twin Falls District
Burley Field Office, Burley, Idaho

Cooperating Agencies: U.S. Fish & Wildlife Service
Bonneville Power Administration
Idaho Department of Lands
U.S. Bureau of Reclamation
Cassia County Commissioners

Participating Agency: Idaho Department of Fish & Game

Tribal Governments: Shoshone-Paiute Tribes
Shoshone-Bannock Tribes

Responsible Official: Assistant Director
Bureau of Land Management
Washington, D.C.

Further Information: Ken Miller, Field Office Manager or
Scott Barker, Project Manager
BLM Burley Field Office
15 East, 200 South
Burley, Idaho 83318
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scott_barker@blm.gov

ABSTRACT: Windland, Inc., a Boise-based, private wind energy development company has submitted a right-of-way application to construct, operate and maintain a wind energy facility along the Cotterel Mountains near the towns of Albion, Malta, and Burley, in Cassia County, Idaho. Windland, Inc. is co-developing the project with Shell WindEnergy, Inc., (a member of the Shell Group). The proposed wind energy facility would occupy approximately 16 miles of ridgeline along Cotterel Mountain, consist of a single linear north-south string of turbines situated primarily on public lands managed by the Bureau of Land Management, Burley Field Office, Burley, Idaho. There is a small amount of Idaho State Land and privately-owned land associated with the proposed project.

This Final Environmental Impact Statement (FEIS) has been completed which analyzes four alternatives in detail: Alternative A (No Action); Alternative B (Proponent's Proposed Action); Alternative C (Modified Proposed Action); and Alternative D (Minimum turbine string action). Other agencies may tie to this analysis for any decisions they may make associated with this proposed project.

Alternative C has been identified as the preferred alternative after having considered the environmental impacts to public lands and the opportunities for use of those lands, which would benefit the most people over the longest term.

This FEIS also contains a proposed amendment to the Cassia Resource Management Plan, 1985, that could amend the plan to allow for the granting of a right-of-way for the development of a wind energy facility. Both the analysis disclosed in the FEIS and the proposed plan amendment are available for comment.

DISCLAIMER

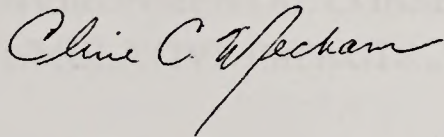
National Environmental Policy Act Disclosure Statement
Bureau of Land Management Draft Environmental Impact Statement
Cotterel Mountain Wind Power Project

The President's Council on Environmental Quality (CEQ) regulations at 40 CFR 1506.5 require that consultants preparing an environmental impact statement (EIS) execute a disclosure specifying they have no financial or other interest in the outcome of the project. The term "Financial interest or other interest in the outcome of the project" for the purposes of this disclosure is defined in the March 23, 1981, guidance "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," 46 FR 18026-18038 at Questions 17a and b.

"Financial or other interest in the outcome of the project" includes "any financial benefits such as promise of future construction or design work in the project, as well as indirect benefits the contractor is aware of (e.g., if the project would aid proposals sponsored by the firm's other clients)." 46 FR 18026-18038 at 18031.

In accordance with the above-referenced regulatory requirements, URS Group, Incorporated has prepared this Final EIS on behalf of the Bureau of Land Management and declares no financial or other interest in the outcome of the proposed project.

Certified by:



March 10, 2006

Clive Mecham
Vice President

Date

URS Group, Incorporated
1750 Front Street, Suite 100
Boise, Idaho 83702

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ACRONYMS

A.D.	After Death
APE	Area of Potential Effects
AUM	Animal unit months
BA	Biological Assessment
B.C.	Before Christ
BFO	Burley Field Office
BLM	Bureau of Land Management
BMP	Best Management Practices
BPA	Bonneville Power Administration
BOR	Bureau of Reclamation
CAFO	Confined Animal Feeding Operation
CDC	Conservation Data Center
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH ₄	Methane
CO	Carbon monoxide
CO ₂	Carbon dioxide
Commission	Shoshone-Bannock Land Use Policy Commission
Council	Tribal Business Council
dB	Decibels
dBA	A-weighted decibels
DOE	Department of Energy
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
°F	Degrees Fahrenheit
FAA	Federal Aviation Administration
FCRTS	Federal Columbia River Transmission System
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FM	Fuel model
FMU	Fire Management Unit
FONSI	Finding of No Significant Impact
FRCC	Fire Regime Condition Class
FS	Forest Service
GIBA	Globally Important Bird Area
HETO	Heritage Tribal Office
I-84	Interstate 84
I-86	Interstate 86

ACRONYMS

I-90	Interstate 90
IDAPA	Idaho Administrative Rules
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDL	Idaho Department of Lands
IDT	Interdisciplinary Team
IDOL	Idaho Department of Labor
IDWR	Idaho Department of Water Resources
IPC	Idaho Power, an IdaCorp Company
IPUC	Idaho Public Utilities Commission
IWETT	Interagency Wind Energy Task Team
ISRH	Idaho Standards for Rangeland Health
ITC	Idaho State Tax Commission
KOP	Key observation point
kV	Kilovolt
kW	Kilowatt
LLC	Limited Liability Corporation
Mg/m ³	Milligrams per cubic meter
mi ²	Square miles
MW	Megawatts
N ₂ O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NASS	National Agricultural Statistics Service
NEPA	National Environmental Policy Act
NEPDG	National Energy Policy Development Group
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NO ₂	Nitrogen dioxide
NO _x	Oxides of nitrogen
NP	Not Present
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NTP	Notice to Proceed
NWCC	National Wind Coordinating Committee
NWPCC	Northwest Power and Conservation Council
O ₃	Ozone
O&M	Operations and maintenance
OHV	Off-highway vehicle
Pb	Lead
PM ₁₀	Particulate matter with an aerodynamic diameter less than 10 microns

ACRONYMS

Proposed Project	Proposed Cotterel Wind Power Project
PSD	Prevention of Significant Deterioration
RAC	Resource Advisory Council
RFP	Request for Proposal
RMP	Resource Management Plan
ROS	Recreational Opportunities Spectrum
ROW	Rights-of-Way
RQD	Rock Quality Designation
RSA	Rotor-swept area
SCI	South Central Idaho
SCS	Soil Conservation Service
SH	State Highway
SIEDO	Southern Idaho Economic Development Organization
SL&I	Salt Lake & Idaho Railroad Company Grade
SO ₂	Sulfur Dioxide
SO _x	Oxides of sulfur
SQRU	Scenic Quality Rating Units
SRMA	Special Resource Management Areas
SWEI	Shell WindEnergy, Inc.
TES	Threatened, endangered and sensitive
µg/m ³	Micrograms per cubic meter
URS	URS Group, Inc.
U.S.	United States
USDA	United States Department of Agriculture
USDI	United States Department of Interior
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	volatile organic compound
VRM	Visual Resource Management
Windland	Windland, Incorporated

ENGLISH/METRIC AND METRIC/ENGLISH EQUIVALENTS

The following table lists the appropriate equivalents for English and metric units.

MULTIPLY	BY	TO OBTAIN
English/Metric Equivalents		
Acres	0.4047	Hectares (ha)
Cubic feet (ft ³)	0.02832	Cubic meters (m ³)
Cubic yards (yd ³)	0.7646	Cubic meters (m ³)
Degrees Fahrenheit (°F) –32	0.5555	Degrees Celsius (°C)
Feet (ft)	0.3048	Meters (m)
Gallons (gal)	3.785	Liters (L)
Gallons (gal)	0.003785	Cubic meters (m ³)
Inches (in.)	2.540	Centimeters (cm)
Miles (mi)	1.609	Kilometers (km)
Pounds (lb)	0.4536	Kilograms (kg)
Short tons (tons)	907.2	Metric tons (t)
Square feet (ft ²)	0.09290	Square meters (m ²)
Square yards (yd ²)	0.8361	Square meters (m ²)
Square miles (mi ²)	2.590	Square kilometers (km ²)
Yards (yd)	0.9144	Meters (m)
Metric/English Equivalents		
Centimeters (cm)	0.3937	Inches (in.)
Cubic meters (m ³)	35.31	Cubic feet (ft ³)
Cubic meters (m ³)	1.308	Cubic yards (yd ³)
Cubic meters (m ³)	264.2	Gallons (gal)
Degrees Celsius (°C)	1.8	Degrees Fahrenheit (°F) –32
Hectares (ha)	2.471	Acres
Kilograms (kg)	2.205	Pounds (lb)
Kilograms (kg)	0.001102	Short tons (tons)
Kilometers (km)	0.6214	Miles (mi)
Liters (L)	0.2642	Gallons (gal)
Meters (m)	3.281	Feet (ft)
Meters (m)	1.094	Yards (yd)
Metric tons (t)	1.102	Short tons (tons)
Square kilometers (km ²)	0.3861	Square miles (mi ²)
Square meters (m ²)	10.76	Square feet (ft ²)
Square meters (m ²)	1.196	Square yards (yd ²)

**EXECUTIVE SUMMARY
OF THE FINAL
ENVIRONMENTAL IMPACT STATEMENT FOR THE
PROPOSED COTTEREL WIND POWER PROJECT
AND PROPOSED RESOURCE MANAGEMENT PLAN AMENDMENT
BURLEY, CASSIA COUNTY, IDAHO**

This Executive Summary is intended to be a synopsis of the *Cotterel Wind Power Project Final Environmental Impact Statement and Proposed Resource Management Plan Amendment* for the reader. The detailed analysis of the Proposed Action, alternatives to the Proposed Action, and the disclosure of impacts is displayed in detail in the FEIS, available both on CD and in hard copy formats. The Final Environmental Impact Statement (FEIS) is also available to the reader on the internet at www.id.blm.gov/planning/cotterel.

INTRODUCTION

In March, 2001, the Bureau of Land Management, Burley Field Office, Burley, Idaho (BLM) received an application from Windland, Inc. (the Applicant) for a right-of-way (ROW) to construct, operate and maintain a wind-driven electric power generation facility on Cotterel Mountain. The BLM accepted this application and initiated a *Notice of Intent to Prepare an EIS and Amend the Cassia Resource Management Plan, 1985* (Cassia RMP) in the Federal Register on December 19, 2002. This triggered an initial public scoping period that ran for 60 days and concluded on February 21, 2003. The process for analyzing the proposal and alternatives began with the publication of the Notice of Intent and was consistent with the requirements of the *National Environmental Policy Act, 1969* (NEPA).

On June 21, 2005, a Notice of Availability (NOA) was published in the Federal Register and the Draft EIS (DEIS) was made available to the public (Appendix A). The publishing of the NOA in the Federal Register marked the beginning of the 90-day public comment period for the DEIS. This FEIS incorporates revisions to the DEIS made in response to comments submitted during the 90-day public comment period. During the public comment period 72 written comments were received by the BLM via comment forms, mail, email, and facsimile. The comments received during the comment period and responses to the comments are provided in Appendix H.

SCOPING

Significant Issues Identified through Scoping and Used to Develop Alternatives

Public, government-to-government, and interagency scoping for issues was accomplished early in the analysis process through public meetings, scoping documents, interagency meetings, and internal BLM interdisciplinary discussions and continues today. Issues that emerged during the analysis

process were also considered in formulating the scope of work and the alternatives. The issues considered to be significant and addressed in detail include:

- Sage-grouse conservation
- Maintaining and protecting tribal treaty rights or heritage links to public lands
- Migratory birds including raptor migration
- Threatened and Endangered Species Protection
- Maintain public access
- Visual resources protection
- Consistency with the Cassia RMP

Other Issues and Concerns Addressed:

- Air quality (dust in communities during construction)
- Ridgeline and cultural significance to tribes
- Historical migration routes of tribes
- Water resources, including surface, groundwater and springs
- Noise/vibration/harmonics
- Vegetation restoration
- Noxious weeds control
- Wildlife conservation
- Wind turbine effects on birds and bats
- Direct and indirect wildlife habitat loss
- Mule deer winter range interruption
- Increase human activity on Cotterel Mountain and effects on wildlife
- Cultural and historic resources protection
- Community economic stability
- Land use changes
- Changing private land values
- Increased traffic on local roads during construction
- Livestock grazing interruption
- Recreation opportunity changes

Issues Deemed Outside the Scope of the EIS:

- Future Bighorn Sheep relocation
- Loss of sage-steppe habitat due to overgrazing
- Other sources of energy opportunities
- Manufacture of wind turbines outside the United States (U.S.)

LEAD, COOPERATING AND PARTICIPATING AGENCIES

The **BLM** is the lead federal agency responsible for conducting the preparation of the draft and final Environmental Impact Statement (EIS) and the associated analysis. The responsible official will be the Assistant Director for Minerals, Realty, and Resource Protection, BLM, Washington D.C.

Cooperating agencies are federal agencies that have jurisdiction by law (40 Code of Federal Regulations (CFR) Section 1501.6) and may or will make a decision relative to the Cotterel Wind Power Project (Proposed Project) based on the analysis disclosed in this EIS. Cooperating agencies may also have special expertise or have information that will assist in development of the analysis. In this analysis, the cooperating agencies include the **Bonneville Power Administration (BPA)**, **U.S. Fish and Wildlife Service (USFWS)**, **Idaho Department of Lands, Bureau of Reclamation (BOR)**, and **Cassia County Commissioners**, representing the local government.

The **Idaho Department of Fish and Game (IDFG)** is a participating agency and is providing input relevant to wildlife and wildlife habitat.

GOVERNMENT-TO-GOVERNMENT CONSULTATION

The U.S. has a unique legal relationship with Indian tribal governments as set forth in the Constitution of the U.S., treaties, statutes, Executive Orders, and court decisions. Since the formation of the Union, the U.S. has recognized Indian tribes as domestic dependent nations under its protection. The Federal Government has enacted numerous statutes and promulgated numerous regulations that establish and define a trust relationship with Indian Tribes.

In this analysis, the BLM has formally initiated consultation with the sovereign nations of the Shoshone-Bannock and the Shoshone-Paiute Tribes. This consultation has been initiated with these Tribal Governments in the manner as requested by them and is ongoing throughout the analysis.

INTERAGENCY WIND ENERGY TASK TEAM (IWETT)

The IWETT is a core group of wildlife biologists from the Bureau of Land Management, U.S. Fish & Wildlife Service, and the IDFG that was developed under charter in 2004 by the BLM. This team is a cooperative interagency effort, specifically formed to assist in the development of alternatives and mitigation recommendations for wildlife and wildlife habitat. This team will continue to work together in the development of monitoring and the adaptive management processes.

THE APPLICANT

Windland, Inc, a Boise-based private wind energy development company, in association with co-developer, Shell Wind Energy, Inc., (a member of the Shell Group), is proposing to build a wind energy facility and related infrastructure along and in the vicinity of Cotterel Mountain, a linear north-south, 16-mile ridgeline located in southeast Idaho between the towns of Albion on the west, and Malta on the east. The Proposed Project would be located in Cassia County, Idaho and situated

primarily on public lands managed by the BLM. There is a small amount of Idaho State Land and privately-owned land associated with the Proposed Project.

PURPOSE OF AND NEED FOR PROPOSED ACTION

The purpose of the Proposed Action is to develop an economically feasible wind-powered electric generation facility on Cotterel Mountain, creating an environmentally sensitive alternative renewable energy source.

The need for the Proposed Action is demonstrated by growing demand for electricity in the northwest and the need to provide an electricity source alternative to traditional energy generation sources such as coal and gas-fired power plants, and hydro-power facilities. This proposal also meets the national need to reduce reliance on foreign energy markets. The Applicant is responding to the BPA, PacifiCorp, and Idaho Power Requests for Proposals to include wind energy resources as a percentage of their energy portfolios.

The Department of the Interior (USDI) and, more specifically, the BLM is seeking opportunities to develop renewable energy resources including wind energy. To accomplish this, the BLM in 2005 finalized the Programmatic Wind Energy EIS assuring a common direction and policy for permitting wind facilities on public land. The presence of an adequate wind energy resource is a necessary precondition for an area to be a candidate for development of a wind energy project. The site must also have adequate construction and transmission access. There must be adequate access from the proposed wind project site to existing transmission lines that would carry the power produced by the wind farm to consumers. The proposed Cotterel Mountain site meets these conditions.

CONFORMANCE WITH EXISTING RESOURCE MANAGEMENT PLAN

The BLM existing Cassia RMP limits ROW to existing facilities and locations and does not address wind energy development. At the time of preparation of the Cassia RMP, wind was not considered as a potential energy source in Idaho, hence Cotterel Mountain was not considered as a wind energy site and the Proposed Action is not consistent with the Cassia RMP. The Proposed Project would require an amendment to the plan should the decision be made to grant a ROW for wind energy development on Cotterel Mountain. The proposed plan amendment to the Cassia RMP is displayed in Chapter 2, Proposed Action and Alternatives, and is available to the reader for comment. The Proposed Action and alternatives are consistent with the Cassia RMP in meeting all other land management objectives.

DECISIONS TO BE MADE

Bureau of Land Management (Lead Agency)

The BLM will make a decision whether or not to grant a ROW to allow for the construction, operation, and maintenance of a wind energy project and related transmission line(s) on federal lands. The BLM will also make a decision whether or not to amend its existing Cassia RMP which will allow for the granting of the ROW if so decided. Both decisions will be outlined in a Record of Decision, based on the outcome of the EIS.

U.S. Fish & Wildlife Service (Cooperating Agency)

The USFWS will issue a Biological Opinion based on a Biological Assessment (BA) of impacts to threatened and endangered species. The BA will address potential impacts of the Proposed Project to bald eagles and gray wolves. The findings of the Biological Opinion will be included in the BLM Record of Decision.

Bonneville Power Administration (Cooperating Agency)

The BPA will make a decision whether or not to offer contract terms for the interconnection of the Proposed Project to the Federal Columbia River Transmission System (FCRTS). BPA has adopted an Open Access Transmission Tariff for the FCRTS, consistent with the Federal Energy Regulatory Commission's *pro forma* open access tariff. Under BPA's tariff, BPA offers transmission interconnection to the FCRTS to all eligible customers on a first-come, first-served basis.

Idaho Department of Lands (Cooperating Agency)

Idaho Department of Lands will make a decision whether or not to grant a ROW for a portion of a transmission line access roads, turbine sites, and other project facilities that would cross state land.

Bureau of Reclamation (Cooperating Agency)

The BOR is deferring the ROW decision to the BLM for a small portion of the transmission interconnection line that will potentially cross lands managed by the BOR.

Cassia County Commissioners (Cooperating Agency)

The Cassia County Commissioners and Planning and Zoning Committee will approve a conditional use permit for certain components of the Proposed Project.

PROPOSED ACTION AND ALTERNATIVES

This section identifies and describes the Proposed Action, the no action alternative and the action alternatives associated with the Proposed Project. The EIS analyzed four alternatives in detail:

- Alternative A: The No Action Alternative
- Alternative B: Applicant's Proposed Action
- Alternative C: Modified Proposed Action with fewer but larger output wind turbines, alternative access, alternative transmission line locations and alternative turbine types
- Alternative D: Modification of Alternative C with a reduced number of wind turbines

A brief description of these alternatives and project features common to all action alternatives is provided below. If selected, Alternative B, C and D would require amending the Cassia RMP. Alternative A would not require an amendment to the Cassia RMP. In addition, Alternatives E and F that were not carried forward are discussed.

Alternative A (No Action)

Alternative A, No Action, is the baseline against which the action alternatives can be compared. This baseline also allows for the disclosure of the effects of not developing the Proposed Project and its associated infrastructure. Under Alternative A, the ROW grant for the construction, operation and maintenance of a wind-powered electrical generation facility would not be granted and the RMP would not be amended by the BLM. This alternative would maintain current management practices for resources and allow for the continuation of resources uses at levels identified in the Cassia RMP.

Alternative B (Applicant's Proposed Action)

This alternative is presented as proposed in the ROW application made by the Applicant to the BLM. The Applicant has attempted to reduce potential Proposed Project impacts through project design, application of BLM Best Management Practices (BMP) and consideration of input from its own public scoping efforts in developing its Proposed Action.

Under Alternative B, the Applicant is proposing to construct a wind-powered electric generation facility along the approximately 16-mile ridgeline of Cotterel Mountain. As proposed, the Project would consist of approximately 130, 1.5 megawatts (MW) wind turbines that would be sited along the west, central, and east ridges of Cotterel Mountain. The west string would be 0.8-miles in length and located along the short side-ridge west of the main Cotterel Mountain ridgeline. The center string of wind turbines would be about 10.9 miles in length and placed along the spine of the central ridgeline of the mountain. The east string of wind turbines would be 4.1 miles in length and located along the east ridgeline that extends south of the Cotterel Mountain summit. In addition to the 130 wind turbines, two 138 kilovolt (kV) overhead transmission interconnect lines would connect the Proposed Project to the transmission grid emanating from two separate substations. The exact location of proposed wind turbines, roads, power lines, or other facility-related construction would be sited based on environmental, engineering, meteorological, and permit requirements.

Each turbine would be 210 feet in height to the center of the hub. Each of the three blades would be 115 feet in length, with an over-all diameter of 230 feet. Maximum blade height would be 325 feet above the surrounding landscape. There would be two substations. The substations would be located at the north and central portions of the middle turbine string. The substations would connect to the existing BPA and Raft River 138 kV transmission lines via two newly constructed transmission interconnect lines. The transmission interconnect lines ROW would cross lands managed by BLM, Idaho State, as well as those under private ownership.

Approximately 25 miles of all-weather gravel roads would be needed to access and maintain the Proposed Project. This would require about 4.5 miles of road reconstruction, and about 22 miles of new road construction. Total estimated cut volume for road construction would be approximately 2,660,000 cubic yards. The estimated fill volume would be approximately 2,500,000 cubic yards. The total construction impact area for all project features would be about 365 acres. Following the reclamation of construction impact areas, the final Proposed Project would occupy an area of about

203 acres. Other physical components of the wind plant are described in Comparison of Project Features of Alternatives B, C and D.

Alternative C (Agency's Preferred Alternative)

Alternative C is a modified alternative to the Proposed Action (Alternative B) with fewer but larger output wind turbines, alternative access, and alternative transmission line locations.

ALTERNATIVE C IS THE AGENCY'S PREFERRED ALTERNATIVE. Under Alternative C, the IWETT has identified additional BMPs that are included to specifically address wildlife issues and concerns related to sage-grouse, raptors, bats and requirements under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Alternative C also incorporates a compensatory/off-site mitigation fund that provides the opportunity for monitoring and adaptive management, the extent of which would be determined by a technical steering committee.

Under Alternative C, the Applicant would construct a wind-powered electric generation facility along 14.5 miles of ridgeline of the Cotterel Mountain. If built as proposed, the project would consist of a linear alignment of approximately 81-98 wind turbines, based on the size of turbine selected, sited along the central and east ridges of Cotterel Mountain. The central ridge would have approximately 64 wind turbines and the east ridge would have approximately 17 turbines. In addition to the wind turbines, one 138 kV overhead transmission interconnect line would connect the Proposed Project to the transmission grid from a single substation. The exact location of proposed wind turbines, roads, transmission interconnect line, or other facility-related construction would be sited based on detailed engineering to address site specific environmental, meteorological, or permit conditions including BMPs.

Under Alternative C, a range of wind turbines would be considered. The smaller of the two would have a 77-meter (230 foot) rotor diameter and would have a generation capacity of 1.5 MW. It would sit on a 65-meter (210 foot) tower and the rotor would consist of three blades, 115 feet in length. Maximum blade height would be 325 feet above the ground. The larger turbine would have a 100-meter (328 foot) rotor diameter and would have a generation capacity of between two and three MW. It would sit on an 80-meter (262 foot) tower and the rotor would consist of three blades, 164 feet in length. Maximum blade height would be 426 feet above the ground.

A single substation would be located approximately midway along the central turbine string. Alternative C would have a single overhead 138 kV transmission interconnect line. The transmission interconnect line would extend northeast from the substation down to the Raft River Valley where it would cross over, but not connect to the existing Raft River transmission line. From here the transmission interconnect line would extend to the north approximately 15 miles in a new ROW adjacent to the existing ROW for the Raft River transmission line. It would cross over the Snake River west of the Minidoka Dam. The line would then travel in a northeast direction where it would connect the Proposed Project to the existing Idaho Power transmission lines located north of the Minidoka Dam. The transmission interconnect line ROW would cross lands managed by BLM, BOR, Idaho State, USFWS as well as those under private ownership.

The Proposed Project would require the reconstruction of about 3.2 miles of road and the construction of about 19.5 miles of new roads. Total estimated cut volume for road construction would be approximately 2,200,000 cubic yards. The estimated fill volume would be approximately 2,425,000 cubic yards. Under Alternative C, the total construction impact area for all project features would be about 352 acres. Following the reclamation of construction impact areas, the final Proposed Project would occupy an area of about 203 acres.

Public access on the ridgeline would consist of a combination of new project roads and existing and newly constructed primitive roads. Although public use of project roads along the ridgeline would be restricted through a series of gates, signage and natural rock barriers, there would not be a loss of public access to existing use areas. Public access would be maintained by linking the existing primitive road system through construction of new primitive roads to allow existing uses of the area, including hunting, to continue.

Monitoring, Adaptive Management, Compensatory (Off-Site) Mitigation, and Technical Steering Committee Common to Alternatives C and D

Monitoring

Under Alternatives C and D, monitoring is included and is intended to determine the effectiveness of the project design, construction and BMPs in protecting wildlife beyond the requirements of Alternative B. This monitoring would be funded by the Applicant through a compensatory mitigation fund (described below). It includes, but is not limited to, continuing the collection of pre-construction baseline data for use in comparative analysis, off-site sage-grouse lek studies, continuing sage-grouse telemetry studies, sage-grouse nesting studies, sage-grouse winter use studies, and raptor nest surveys.

Wind power projects have effects on wildlife, particularly avian species and bats, depending upon the location, geography, and natural setting of the project. Monitoring of the project (5 years or greater) is key in understanding the relationship between the project design, siting of the towers, operation of the facility and effects on wildlife. These effects can occur in a variety of ways, but based on data collected at other wind farms, are chiefly associated with bird collisions with the large blades that drive each of the wind turbines. The blades move through an area defined as “the rotor swept area” of each turbine. Additional long-term monitoring may also be necessary to determine how the characteristics of the project and its turbines affect the behavior and migration of birds and bats and to determine if there are certain turbines along the string that are contributing to bird and bat mortality that would trigger the need to implement management actions to reduce these effects.

Adaptive Management

Adaptive management is based upon a concept of science that understands ecosystems are complex and inherently unpredictable over time. It approaches the uncertainties of ecosystem responses with attempts to structure management actions using a systematic method from which over time learning is a critical tool. Learning and adapting is based on a process of long-term monitoring of impacts to

wildlife from this project. The Applicant and the BLM recognize that the findings of long-term monitoring could indicate the need for modification of operations and adaptive management. The BLM and the Applicant will work cooperatively with the USFWS and the Idaho Department of Fish and Game to develop appropriate actions or mitigation measures designed to address issues or concerns identified as a result of monitoring. Adaptive management tools that are available to the Applicant and BLM include, but are not limited to: timing stipulations during construction, operational changes of turbines, siting considerations, lighting scenarios, and color schemes. These are, for the most part, addressed in Appendix D.

Off-site Mitigation

BLM Washington Office Policy Guidance Instruction Memorandum No. 2005-069 states that off-site mitigation can be funded by voluntary contributions from the Applicant into a compensatory mitigation fund held by the BLM (Appendix E). This would be done by cooperative agreement between the Applicant and the BLM. This cooperative agreement would prescribe the level of contribution and the management and use of the fund. Accordingly, the Applicant has volunteered to contribute to a compensatory mitigation fund pursuant to the above-mentioned guidance. The Applicant has executed a letter of commitment to enter into a cooperative agreement in accordance with the foregoing (Appendix F). The Applicant intends the annual contribution to be in an amount equal to approximately one-half of one percent of the gross revenues received from the Proposed Project electricity sales. For a 200 MW project name plate, that contribution is expected to average approximately \$150,000 per year at today's forecasted production and electricity rates.

An extensive framework of off-site mitigation practices was also recommended by the IWETT to address impacts to wildlife, should they occur as a result of the Proposed Project. These practices would also be funded by the compensatory mitigation fund (described above). The kinds of off-site mitigation practices recommended include, but are not limited to: purchase of key habitats; acquisition of conservation easements on key habitats; or, restoration, treatment or conversion of existing federally managed off-site habitats. Any off-site activities proposed by the steering committee would have impacts associated, which would be separate from the impacts identified for this Proposed Project and analyzed in this document. They would be analyzed in separate NEPA documents on a case-by-case basis as needed.

Technical Steering Committee

It was further recommended by the IWETT that a technical steering committee be formed to advise on the design of mitigation measures and monitoring covered by the compensatory mitigation fund. This committee would be responsible for recommending actions that would be funded by the compensatory mitigation fund (including implementation of monitoring over and above that which is required of the Applicant, recommending commensurate off-site mitigation, and recommending adaptive management strategies. The intent is to ensure interagency involvement in mitigation and monitoring activities with particular emphasis on addressing the requirements of the Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act and sage-grouse conservation. The committee will

also examine ongoing research and scientific studies attempting to understand the behavior and relationship between wildlife and wind energy developments. The technical steering committee would be an expansion of the IWETT and would consist of interagency wildlife and other resource professionals and the Applicant, with final decision authority resting with the BLM Field Office Manager. This committee would be formed and chartered prior to any construction of the Proposed Project.

Alternative D

Alternative D is a modification of Alternative C with a reduced number of wind turbines. The IWETT has identified additional BMPs that are included in this alternative to specifically address wildlife issues and concerns related to sage-grouse, raptors, bats and requirements under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Alternative D also incorporates a compensatory/off-site mitigation fund that provides opportunities for monitoring and adaptive management the extent of which would be determined by a technical steering committee.

The premise of Alternative D is elimination of turbines from a portion of the sage-grouse habitat (lekking, nesting, brood rearing, and winter range) while still maintaining an economically viable project. Because of the infrastructure costs involved with the project (i.e. turbines, roads, powerlines, substation), the Applicant has determined that 66 turbines in the 1.5 + MW size range would be necessary for an economically viable project. Concentrating the turbines along the center ridge of Cotterel Mountain would be the best way to obtain this number of turbines while affecting the fewest resources. In addition, it would concentrate the project features on the central ridge, leaving the east ridge undeveloped.

Alternative D would use the same size range and types of wind turbines as those proposed under Alternative C. Under Alternative D, a range of 66-82 turbines would range in generation capacity from 1.5 to 3.0 MW. Tower height for the turbines would range from 210 feet to 262 feet, with maximum blade height ranging from 325 to 426 feet above the ground. Rotor diameters would range from 230 feet to 328 feet (77-100 meters).

The wind turbines, substations, and transmission interconnect line would be the same for Alternative D as described under Alternative C.

Under Alternative D, the Proposed Project would require the reconstruction of about 2.9 miles of road and the construction of about 14.5 miles of new roads. Total estimated cut volume for road construction would be approximately 2,080,000 cubic yards. The estimated fill volume would be approximately 2,275,000 cubic yards. The total construction impact area would be about 282 acres. Following the reclamation of construction impact areas, the final Proposed Project would occupy an area of about 160 acres.

Public access under Alternative D would be similar to Alternative C along the central ridgeline and turbine string. However, under Alternative D there would be no road construction or turbines sited along Cotterel Mountain's east ridge. The lower portion of the existing Cotterel Mountain summit

road would have minor modifications made to improve safety. The existing Cotterel Mountain summit access road and primitive jeep trails along the east ridgeline would remain unchanged and would continue to be open to the public.

Required on-site monitoring, monitoring, adaptive management and compensatory (off-site) mitigation would be the same for Alternative D as described under Alternative C.

Alternatives Considered But Not Analyzed In Detail

Alternative E

Alternative E was developed by the identification of issues through public scoping, agency scoping, the IWETT, government-to-government consultation, and interdisciplinary resource recommendations and is basically a modification of Alternative D. It was proposed as a possible method of further minimizing potential impacts to sage-grouse habitat and habitat use while maintaining an economically viable wind energy development. Alternative E, while avoiding the most direct suspected impacts to sage-grouse lek use and associated nesting at several key locations on the mountain, would effectively reduce the length of the turbine string to approximately 8.4 miles and reduce the number of turbines that could be constructed to a range of 40-49. This is substantially less than the minimum number of wind turbines disclosed by the Applicant as being economically viable to construct (66 turbines), operate and maintain at the Cotterel Mountain site.

The Applicant's analysis and disclosure of a minimum size project is based on the cost of infrastructure (i.e. roads, substation, power transmission, underground cabling, etc.), the cost of construction on a remote, isolated mountaintop, the cost of monitoring and mitigation, and the cost and time required for permitting on public land. It is further based on the time required to amortize the capital investment of a project. Alternative E would have essentially the same infrastructure costs as Alternative D with approximately 60 percent of the production potential. Accordingly, the Applicant states that it is not possible to recoup costs in a reasonable amount of time or achieve the rate of return necessary for such a large investment, nor would it be possible to obtain financing on acceptable terms. While Alternative E is technically feasible and could be constructed, it does not meet the Council on Environmental Quality (CEQ) test of a reasonable alternative since it is not economically viable. Therefore, Alternative E does not meet the purpose and need stated in this document. For these reasons, Alternative E is not carried forward or analyzed in detail. It should be noted that in CEQ's definition of "reasonable," technical and economic are linked. If a proposed project does not meet one or the other, it is not feasible to construct and therefore, not a reasonable alternative.

The casual observer may notice a number of small wind projects cropping up around southern Idaho. This begs the question, why are 40 turbines not economically feasible on Cotterel Mountain while one, three or seven turbines seem to be a viable project in other areas? As stated above, the answer is closely tied to infrastructure costs, construction costs, monitoring and mitigation costs, the high costs and lengthy time requirements of siting on public land vs. the low cost and short time frames involved

with siting on private land, and the capital investment amortization time and costs. It should be noted that, with the exception of time to amortize the capital investments, these smaller projects located on private land do not experience these other costs.

Alternative F

Alternative F was developed by the identification of issues through public scoping, agency scoping, the IWETT, government-to-government consultation, and interdisciplinary resource recommendations. This alternative further distances the wind energy facilities from sage-grouse use areas. The premise of Alternative F is to site the wind turbines based on the best available science, combined with professional judgment, for the protection of sage-grouse and their habitat. Studies regarding the lifecycle of sage-grouse have shown that nesting and brood rearing generally take place within a 1.8-mile radius of active leks. There is also some scientific information on lesser prairie chickens to suggest that they may avoid tall structures. Therefore, it has been suggested by some that placement of a wind power project within that 1.8 mile radius of leks may have an adverse affect on the lifecycle activities of sage-grouse.

Application of a 1.8-mile no development zone around known, active sage-grouse leks would limit the siting of the wind generation facility to the 3.6-mile section of the central Cotterel Mountain ridgeline and reduce the number of constructible turbines to approximately 20. This requirement would render Alternative F not economically feasible, as a commercial wind generation facility and not in accordance with the purpose and need stated in this document. Therefore, Alternative F has been considered but is not being analyzed in detail.

Project Features Common to All Action Alternatives

Major components of the Proposed Project and common to the other action alternatives identified include:

- Multiple wind turbines and turbine foundations
- Multiple pad mounted transformers
- Buried power collection lines and communication cables
- Several miles of project access roads including existing, reconstructed, and newly constructed road beds
- Meteorological towers on foundations
- One to two substations
- Newly constructed 138 kV overhead power transmission interconnect line(s)
- Operations and maintenance building (O&M Building); and
- Portable on-site cement batch plant and rock crusher

The table below provides a comparison of the alternatives by Proposed Project features.

Comparison of Project Features of Alternatives B, C and D.

Project Features	Alt. B	Alt. C	Alt. D
Project nameplate (in MW)	195	147-243	123-198
Number of turbines	130	81-98	66-82
Turbine Nameplate (in MW)	1.5 MW	1.5-3 MW	1.5-3 MW
Turbine hub height (meters)	64	80	80
Turbine diameter (in meters)	70	77-100	77-100
Total length of turbine string (in miles)	15.8	14.5	11.6
Project roads total (in miles)	26.6	24.4	19.3
Existing (To be used without modification)	0	1.7	1.7
Reconstructed	4.5	3.2	2.9
New	22.1	19.5	14.7
Electrical trenching (outside of roads, in miles)	5	3-4	2.8
New transmission Interconnect lines (in miles)	9	19.7	19.7
Substations	2	1	1
Meteorological towers	3	3	3
Maintenance and operation building	1	1	1
Temporary ground disturbance (in acres)	365	350	280
Permanent ground disturbance (in acres)	203	203	158
Construction features			
Earth work Cut (in cubic yards)	2,663,496	2,203,176	2,079,286
Fill	2,506,995	2,423,935	2,275,735
Difference	+156,501	-220,759	-196,449
Truck trips to build project roads (road base only)	12,625	10,885	8,500
Truck trips to build project (turbines, substations, other)	2,050	1,850	1,250
Total truck trips	14,675	12,735	9,750
Number of batch plants	1	1	1
Mitigation			
Wildlife fatality monitoring	X	X	X
BLM BMPs	X	X	X
Compensatory/off-site mitigation		X	X
Public access available		X	X

AMENDING THE EXISTING CASSIA RESOURCE MANAGEMENT PLAN

The Proposed Action and the action alternatives are not consistent with the existing Cassia RMP. When the Cassia RMP was completed, the development of wind energy was not considered as a potential use on Cotterel Mountain and the Cassia RMP contained no provisions for the granting of a ROW to new facilities/localities within Management Area 11, including a ROW for wind energy

development. Therefore, if an action alternative is selected, an amendment to the Cassia RMP must be made as per regulations found at 43 CFR 1601.

Included in this FEIS is a proposed plan amendment. The BLM published its intent to amend the Cassia RMP in the Federal Register in December 2002. The proposed plan amendment is presented in Chapter 2, Proposed Action and Alternatives.

AFFECTED ENVIRONMENT/EXISTING CONDITION

The purpose of this section is to describe the existing environment/existing condition of the Cotterel Mountain area including conditions and trends that could be affected by the alternatives described above.

The Cotterel Mountain range is an area that experiences a range of precipitation of 12 to 25 inches of rain per year depending upon elevation. The wind blows from west to east and winter snowfall is blown clear of certain areas of the mountain while forming deep snowdrifts in other areas.

The geology of the Cotterel Mountain is described as a long, low ridge with a relatively steep face or escarpment on the east side and a long, gentle slope on the west side. The Proposed Project area generally consists of Pliocene and Upper Miocene volcanic rocks, rhyolite flows, tuffs, and ignimbrites.

Soils in the Proposed Project area are located at high elevation, have low water-carrying capacity, have the potential for wind and water erosion, and have minimal to moderate productivity capabilities as rangeland.

The Cotterel Mountain ridgeline divides the Raft River watershed on the east from the Lake Walcott watershed on the west. There are no designated major streams within the Proposed Project area. There are 14 springs, three spring developments, and one well within the Proposed Project boundary.

The relatively remote Proposed Project area is generally quiet and has no industrial noise sources. Existing noise in the Proposed Project area vicinity is attributable to: recreational users such as off-highway vehicles (OHV) and snowmobile riders; occasional low flying aircraft; agricultural equipment; and traffic on area roads.

Big game species include mule deer and mountain lions. Bighorn sheep occur approximately 15 miles south on nearby Jim Sage Mountain and have occasionally wandered on to Cotterel Mountain. The IDFG maps both mule deer and bighorn sheep winter range within the Proposed Project area.

Cotterel Mountain supports numerous species of small mammals. Five species of amphibians and reptiles have been documented in the Proposed Project area or its vicinity. Bats likely use Cotterel Mountain on a year-round basis. Three species of bats have been documented in the vicinity of the Proposed Project area.

Large expanses of big and low sagebrush, juniper, grasslands and mountain mahogany are found within the Proposed Project area. These vegetation types provide potential habitat for a number of bird species, including sage-grouse, Brewer's sparrow, grasshopper sparrow, loggerhead shrike, pinyon jay, plumbeous vireo, sage sparrow, and sage thrasher. In addition, the abundance of open cliffs, strong updrafts, and the close proximity of agricultural lands make this area prime habitat for raptor species including ferruginous hawks, peregrine falcon, prairie falcon, golden eagle and Swainson's hawk. Avian species surveys within the Proposed Project area documented 84 species of birds. Of these, 12 species of falcons, hawks, or eagles were observed. Three species of upland game bird were observed including the greater sage-grouse. In addition to the wide diversity of bird species found during the surveys, there are specialized topographical features that provide breeding, nesting and wintering habitats for many avian species that are not widely available in the vicinity of the Proposed Project area.

There is one known threatened and endangered species (Bald eagle) and potential habitat for another (gray wolf). Approximately 40 BLM Sensitive plant and animal species are known to occur or are suspected to occur within the Proposed Project area and its vicinity.

The Proposed Project area is located adjacent to the Raft River Valley, which lies immediately east of Cotterel Mountain and is situated near a historically important crossroads of the Oregon Trail. The "Parting of the Ways" or "Separation of the Trails," located on the west bank of the Raft River, was the junction where travelers had to decide whether to head south toward California or proceed west along the Snake River toward the Oregon Country.

The cultural resources inventory and evaluation activities resulted in the identification of 21 archaeological sites and 63 isolated finds, in addition to five previously recorded sites. The BLM has formally initiated consultation with the sovereign nations of the Shoshone-Piaute and the Shoshone-Bannock in the manner as requested by them. Consulted parties expressed knowledge of past use of the Cotterel Mountain area describing general use of the ridge as a transportation corridor.

The Proposed Project would be located in Cassia County and Minidoka County Idaho. Cassia County is closely linked economically with Minidoka County to the north. The two-county area is called the Mini-Cassia area. The Mini-Cassia economy was built around agricultural industries, such as livestock (beef and dairy cattle, sheep) and crop production (sugar beets, grains, potatoes, alfalfa, and beans). Today, the Mini-Cassia area economy continues to be centered on agricultural industries such as food processing. Both counties have higher average unemployment rates compared to other southern Idaho counties, in part due to seasonal layoffs typical of the food processing industry. The area has experienced business closures and layoffs in recent years.

Major land uses include livestock grazing, wildlife habitat, recreation, utility distribution, and communication facilities locations. Management goals for the Proposed Project area include expanding dispersed recreation opportunities, providing for livestock grazing, and transferring certain lands from federal ownership. Prominent land uses around the Proposed Project area include: rural

community commercial use that is zoned for the cities of Malta and Albion; commercial recreational use at the Pomerelle Mountain Resort; and agricultural uses such as farming, grazing, and confined animal operations.

A primitive road extends along the Cotterel Mountain ridge top providing access to the entire mountain. Public access to the top of the mountain is available from the north, southwest and southeast. Several feeder roads and trails provide additional access down lateral ridges and drainages, but large areas of Cotterel Mountain remain roadless.

The Pomerelle Mountain Resort is located about nine miles west of the Proposed Project area and provides winter recreation in the form of skiing and snowmobiling. The City of Rocks National Reserve, a popular camping, hiking, rock climbing, and historical area is located about 24 miles southwest of the Proposed Project area. The recreational uses of Cotterel Mountain include hunting, OHV use, picnicking, hiking, and some dispersed camping. The public lands associated with Cotterel Mountain are mandated by the Cassia RMP to provide for multiple uses, including a diverse choice of recreation opportunities.

There are two grazing allotments located within the Proposed Project area, North Cotterel and South Cotterel. The North and South Cotterel allotments have an average stocking rate of between six to seven acres per Animal Unit Month (AUM). Within the Proposed Project area boundary, there are approximately 1,700 AUMs.

ENVIRONMENTAL CONSEQUENCES

The environmental consequences of the Proposed Action and alternatives to the Proposed Action are summarized and compared in the table below. A complete description and disclosure of the impacts are found in Chapter 4, Environmental Consequences.

Summary Comparison of Resource Impacts.

Resource Issue	Alternatives			
	A	B	C	D
PHYSICAL				
Air Quality	No impact	Criteria pollutants and greenhouse gases would temporarily be emitted during construction of the Proposed Project	Impact to climate or air quality would be similar to those described under Alternative B; however, the temporary effects would be slightly less due to less construction	Impact to climate or air quality for Alternative D would be similar to those described under Alternatives B and C; however, the temporary effects to air quality would be the least under Alternative D
Geologic Hazards	There would be no impact related to geology.	Shallow blasting to set wind turbine foundations and for road construction up to 203 acres disturbed	Shallow blasting to set wind turbine foundations and for road construction up to 203 acres disturbed	Shallow blasting to set wind turbine foundations and for road construction up to 158 acres disturbed
Paleontological Resources	No impact	No impact	No impact	No impact
Soils	There would be no impact related to soils	Up to 368 acres would be initially disturbed 165 acres would be reclaimed 203 acres of permanent impact to soils	Up to 350 acres would be initially disturbed Up to 147 acres would be reclaimed 203 acres of permanent impact to soils	Up to 270 acres would be initially disturbed Up to 112 acres would be reclaimed 158 acres of permanent impact to soils
Water Resources				
Surface Water	There would be no impact related to water resources	The Proposed Project would have a low potential to affect surface water resources	Same as Alternative B	Same as Alternative B
Ground Water	There would be no impact related to water resources	Blasting should not alter the flow of springs in the Proposed Project area	Same as Alternative B	Same as Alternative B

Summary Comparison of Resource Impacts.

Resource Issue	Alternatives			
	A	B	C	D
Noise				
Increased noise levels near residences and wildlife habitat	No effect Existing background noise levels in the area would continue	Noise from large trucks during construction would be temporary Operational impact from noise to Sensitive receptors are not expected to occur	Same as Alternative B	Same as Alternative B – shorter in duration Operational impact would have less of a potential to affect recreational users
BIOLOGICAL				
Vegetation				
Removal of vegetation	No change to the existing vegetation beyond the levels identified in the Cassia RMP	Up to 368 acres of vegetation would be directly affected by construction of all Proposed Project features Up to 165 acres reclaimed 203 acres of permanent impact to vegetation	Up to 350 acres of vegetation would be directly affected by project construction of all Proposed Project features Up to 147 acres reclaimed 203 acres of permanent impact to vegetation	Up to 282 acres of vegetation would be directly affected by project construction of all Proposed Project features Up to 123 acres reclaimed 158 acres of permanent impact to vegetation
Noxious weeds	No change to the existing vegetation beyond the levels identified in the Cassia RMP	Disturbance of vegetation could lead to the establishment and spread of noxious weeds, which would increase direct competition for limited resources (nutrients, water, space, etc.) with native or desired vegetation Indirectly, these species could augment the amount and continuity of fuels, which could lead to increased fire return intervals	Same as Alternative B	Same as Alternative B

Summary Comparison of Resource Impacts.

Resource Issue	Alternatives			
	A	B	C	D
Wildlife				
Loss of big game winter range	There would be no adverse impact	Winter range would be permanently eliminated on up to 105 acres of mule deer habitat and 194 acres of bighorn sheep habitat Mountain lions could be initially displaced by construction activities, but would likely habituate to Proposed Project features over time	Winter range would be permanently eliminated on up to 62 acres of mule deer habitat and 162 acres of bighorn sheep habitat Impacts to mountain lions would be the same as Alternative B	Winter range would be permanently eliminated on up to 58 acres of mule deer habitat and 115 acres of bighorn sheep habitat Impacts to mountain lions would be the same as Alternative B
Big game displacement and/or stress	There would be no adverse impact	Displacement of big game from Proposed Project construction and operation. Potential displacement impact from increased human activity.	Same as Alternative B	Smaller project size would result reduced area of displacement and less areas of improved public access Displacement would still occur but on a smaller scale
General wildlife habitat	There would be no adverse impact	Wildlife could be negatively affected by increased traffic and human presence on Cotterel Mountain Permanent loss of 203 acres of potential habitat	Same as Alternative B	Permanent loss of 158 acres of potential habitat Smaller project size would result in reduced area of displacement and less areas of improved public access

Summary Comparison of Resource Impacts.

Resource Issue	Alternatives			
	A	B	C	D
Estimated annual avian and bat mortality due to collision with wind towers or power lines	There would be no adverse impact	Raptors = 0-63 mortalities All birds = 0-934 mortalities Bats = 0-667 mortalities Upper end mortality estimates are based on total avian numbers from point counts, mortality at other operating wind projects and total rotor swept area with an operating capacity factor of 35% applied. This estimate assumes that all birds flying within the rotor swept area would be killed (worst case scenario)	Raptors = 0-81 mortalities All birds = 0-1188 mortalities Bats = 0-848 mortalities Assumes larger rotor swept area Same as Alternative B	Raptors = 0-66 mortalities All birds = 0-968 mortalities Bats = 0-691 mortalities Assumes larger rotor swept area Same as Alternative B
Nesting raptors	There would be no adverse impact	Wind turbines would be sited greater than 1/4 mile from the three golden eagle nests Blasting during nesting season could result in nest abandonment Resident hunting raptors may avoid the vicinity of the turbines Habitat lost to construction would result reduced prey base	Same as Alternative B Same as Alternative B	Same as Alternative B Same as Alternative B
Loss of sage-grouse winter range	Existing situation expected to continue	Direct loss of 68 acres Displacement from up to 6,435 acres	Direct loss of 48 acres Displacement from up to 5,716 acres	Direct loss of 34 acres Displacement from up to 4,585 acres

Summary Comparison of Resource Impacts.

Resource Issue	Alternatives			
	A	B	C	D
Loss of sage-grouse nesting habitat	Existing situation expected to continue	Direct loss of 33 acres Displacement from up to 5,605 acres	Direct loss of 28 acres Displacement from up to 4,890 acres	Direct loss of 15 acres Displacement from up to 3,194 acres
Displacement of sage-grouse from lek sites	Existing situation expected to continue	Direct loss of 84 acres Displacement from up to 3,395 acres	Direct loss of 77 acres Displacement from up to 3,345 acres	Direct loss of 52 acres Displacement from up to 3,255 acres
Displacement of bats from hibernation sites	Existing situation expected to continue	Noise and percussion from blasting, drilling, digging, and movement of large vehicles could displace roosting, breeding, or hibernating bat species	Same as Alternative B	The smaller project would require less blasting resulting in a reduced potential for displacement of roosting, breeding, or hibernating bat species
Threatened and Endangered Species				
Bald Eagle	There would be no adverse impact	Small potential for direct mortality or injury from electrocution, collisions with transmission lines, or turbine blades	Same as Alternative B	Same as Alternative B
Gray Wolf	Gray wolves are not known to occur on Cotterel Mountain; therefore, there would be no adverse impact	Same as Alternative	Same as Alternative A	Same as Alternative A

Summary Comparison of Resource Impacts.

Resource Issue	Alternatives			
	A	B	C	D
BLM Sensitive Species	Existing situation expected to continue	Cliff chipmunk populations would be affected during construction. These areas would likely be avoided or abandoned, but once construction is complete and disturbance levels decline, cliff chipmunks would be expected to reoccupy habitats near the facility Nesting and non-breeding golden eagles could be adversely affected not only by construction disturbance, but also from potential collisions with turbines	The impact of Alternative C to special status species would be similar to those expected to occur under Alternative B, with slightly smaller areas of permanent and temporary impacts from project construction and fewer turbines	The impact of Alternative D to special status species would be similar to those expected to occur under Alternative B and C, with slightly smaller areas of permanent and temporary impacts from project construction
CULTURAL RESOURCES				
Prehistoric Resources	There would be no effect	No Effect	Same as Alternative B	Same as Alternative B
American Indian Concerns	There would be no effect	Concerns have been identified	Same as Alternative B	Same as Alternative B

Summary Comparison of Resource Impacts.

Resource Issue	Alternatives			
	A	B	C	D
Historical Resources	There would be no effect	Alternative B would have no impact to sites CM-S-5, CM-S-16, CM-S-20, CM-S-22, or 10CA629 since each of these is located outside of the area of potential effects and would be avoided Proposed Project impacts to the remaining 21 sites, and to any sites discovered during additional survey of the transmission lines and access roads, would range from no impact to high impact depending on the degree of loss of integrity to the site and on the significance of the site	Impacts for Alternative C are similar to impacts for Alternative B with the exception that the Proposed Project would have no impact to site CM-S-17 in Alternative C. This site would be avoided	Impacts for Alternative D are similar to impacts for Alternative C with the exception that the Proposed Project would have no impact to sites CM-S-21, CM-S-22, CM-S-18, and CM-S-1 in Alternative D. Alternative D would have the fewest impacts to historical and cultural resources
SOCIOECONOMIC				
Regional Economy and Community	There would be no impact or changes to regional or local socioeconomic conditions. The Proposed Project area would continue to function as a dispersed recreation area and would continue to provide seasonal grazing opportunities for livestock. The Mini-Cassia area would not experience the tax revenue benefits that would be associated with the project	Impact due to temporary direct and secondary increase in jobs, income, and spending Construction cost of \$200 million. Local and regional labor force could fill positions, and local lodging could accommodate workers Increase in population would be small	Impacts would be similar to Alternative B	Temporary direct and secondary increase in jobs, income and spending. Construction cost of approximately \$100 million One-time influx of sales tax revenue, less than under Alternative B

Summary Comparison of Resource Impacts.

Resource Issue	Alternatives			
	A	B	C	D
Regional Economy and Community (continued)		No effect on local businesses No impact on tourism Impact of one-time influx of sales tax revenue of approximately \$500,000 Permanent increase in jobs, income, and spending. Annual operation cost would be \$4.5 million No relocations, displacements, substantial growth of concentration of population, and related demand for public services would occur Additional property tax revenue to the school district		Annual operation cost would be \$2.3 million. Permanent increase in jobs, income, and spending would be less than under Alternative B Beneficial impact upon annual property tax revenues, similar in type but less than Alternative B Beneficial impact of permanent increase in sales tax revenue, similar in type but less than under Alternative B Impact to population and demand for public services would be less than under Alternative B
Property Values	There would be no effect	Impacts to property values are not likely	Same as Alternative B	Same as Alternative B
Environmental Justice	There would be no effect	Environmental justice impacts are limited to American Indian Concerns	Same as Alternative B	Same as Alternative B

Summary Comparison of Resource Impacts.

Resource Issue	Alternatives			
	A	B	C	D
LAND USE				
Public Access	There would be no effect	Public access to federal and state lands within the Proposed Project area would not be restricted, except during construction of the project for safety purposes	Public access on the ridgeline would be altered from Alternative B to become a combination of new project roads and existing and newly constructed primitive roads	Same as Alternative C
		Following project construction, public access to federal and state lands would be improved with 24.5 miles of new or reconstructed roads	Public use of project roads would be restricted through a series of gates and natural rock barriers but would not result in a loss of access to traditional use areas	
			Primitive access would be maintained wherever possible by linking the existing primitive road system through construction of new primitive roads	

Summary Comparison of Resource Impacts.

Resource Issue	Alternatives			
	A	B	C	D
Recreation	Based on the activities outlined in the Cassia RMP, no change to recreation opportunities or degree of typical use would be anticipated in the area, beyond some minor modifications to recreation facilities and trails These modifications are expected to enhance the recreation spectrum in the Proposed Project area	During construction of the Proposed Project, noise, dust, traffic, equipment use, and associated human activities would change the character of the area and result in a temporary loss of recreational opportunities Wind turbines would be located within about 760 feet of the Coe Creek picnic site Proposed Project could result in change of visitor/use or experience. Changes to recreation use would not alter the current recreational opportunities spectrum category (semiprimitive motorized) for Cotterel Mountain	Construction impacts would be the same as Alternative B Wind turbines would be located within about ¼ mile (1,400 feet) of the Coe Creek picnic site Visitors may be able to hear the turbines during times of turbine operation but less so than under Alternative B	Construction impacts would be the same as Alternative B Wind turbines would be located within about ¼ mile (1,400 feet) of the Coe Creek picnic site Overall smaller project would result in reduced impacts to recreational users
Land Status	There would be no effect	No effect to existing surface land ownership or mineral ownership	Same as Alternative B	Same as Alternative B
Rights-of-Ways	There would be no effect	Future ROW would not be affected by the Proposed Project Approval would continue to be obtained from the BLM in accordance with the processes outlined in 43 CFR 2800 and the BLM Right -of-Way Handbook (H-2800-1). An amendment to the land use plan may be required	Same as Alternative B	Same as Alternative B

Summary Comparison of Resource Impacts.

Resource Issue	Alternatives			
	A	B	C	D
Livestock Grazing	Based on the Cassia RMP no changes to grazing would be expected beyond some vegetation treatments or minor range improvement projects There would be no modification of the existing acres, AUM, range conditions, or improvements outside those identified in the Cassia RMP	Temporary loss of up to 165 acres of rangeland vegetation Permanent impacts to 203 acres of rangeland vegetation would result in a loss of livestock forage	Temporary loss of up to 147 acres of rangeland vegetation Permanent impacts to 203 acres of rangeland vegetation would result in loss of livestock forage	Temporary loss of up to 112 acres of rangeland vegetation Permanent impacts to 158 acres of rangeland vegetation would result in loss of livestock forage
VISUAL RESOURCES				
Visual Resources	There would be no effect	Vehicle and heavy equipment traffic associated with project construction could result in short-term impacts The operational phase of the project would have long-term impacts to surrounding view sheds and communities Permanent impacts to visual resources would be greatest under this alternative	Short-term impacts to visual resources would be similar to Alternative B, but with fewer trips needed during the construction phase Long-term impacts would also be slightly less based on the reduced number of turbines	Short-term impacts to visual resources would be the lowest under this alternative, and would require the fewest trips during the construction phase Long-term impacts would also be lowest, based on the reduced number of turbines
HAZARDOUS MATERIALS				
Hazardous Materials	There would be no effect	During construction of Alternative B, BMP would be used to avoid spills, leaks, or dumping of hazardous substances	Same as Alternative B	Same as Alternative B

Summary Comparison of Resource Impacts.

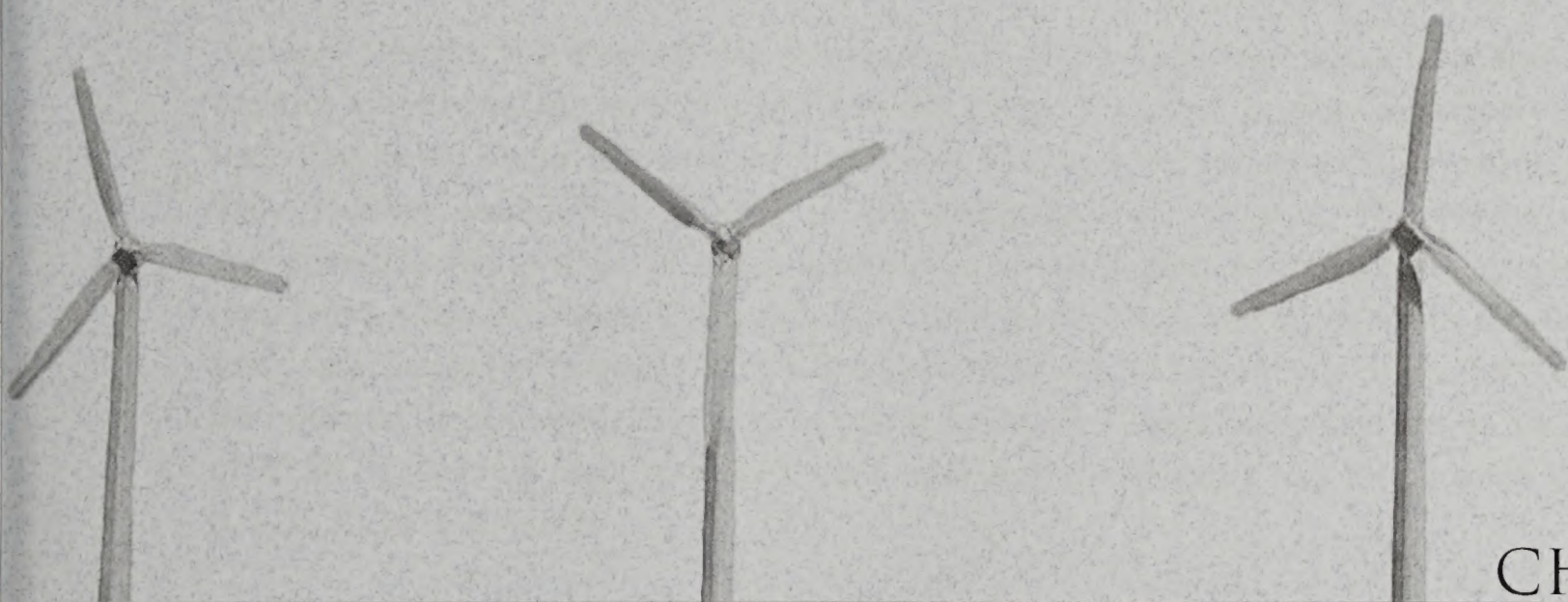
Resource Issue	Alternatives			
	A	B	C	D
FIRE MANAGEMENT				
Fire and Fuels	Under the Alternative A, fire management's ability to suppress wildfire and manage surface fuels within the Proposed Project area would not be affected. Fire frequency and intensity would not be changed by Alternative A	The risk of human caused ignitions would increase Suppression strategies would be limited by the presence of turbines and buried electrical cables Improved, wider roads would act as fire breaks and provide improved access and shorter ground response times Towers would increase the lightning-attractivity of Cotterel Mountain resulting in a potential increase in lightning strikes. This may or may not affect the number of lightning caused ignitions	Same as Alternative B	Impacts would be similar to B, but the risk of human caused ignitions would lower due to overall smaller project size Suppression strategies would not be limited on east ridge of Cotterel Mountain

CUMULATIVE IMPACTS

The CEQ regulations for implementing the NEPA require assessment of cumulative effects in the decision-making process for federal projects. Cumulative effects are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative effects are considered for each resource and disclosed in detail in the EIS.

Cumulative effects in this analysis were determined by combining the effects of each alternative with past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other past, ongoing, or reasonably foreseeable future actions in this area and in the surrounding landscape. All resource impacts would be added to these actions to portray the cumulative picture or incremental contribution this Proposed Project would have on the environment. Potential cumulative impacts are discussed in detail in Section 4.16 of this Final EIS.

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CHAPTER 1

PURPOSE AND NEED

1.0 PURPOSE AND NEED

Cotterel Mountain is a linear north-south ridgeline about 16 miles in length that lies in south central Idaho, between the towns of Albion to the west and Malta to the east, within Cassia County, Idaho. It is predominately federally managed public land within the Idaho Bureau of Land Management (BLM) Twin Falls District, Burley Field Office (Figure 1.0-1).

The potential for developing wind energy on Cotterel Mountain as a resource to generate electricity has been investigated for two decades. The Bonneville Power Administration (BPA) funded wind data collection activities throughout the Pacific Northwest during the 1980s. BPA is a federal agency that owns and operates the majority of the high-voltage electric transmission systems in the Pacific Northwest. Utilizing this BPA funding opportunity, the Oregon State University Energy Resources Research Laboratory collected and recorded wind data at Cotterel Mountain from 1984 through 1988.

National Oceanic and Atmospheric Administration (NOAA) meteorological data was also used to produce estimates of the level of available wind energy at various locations in several western states, including Idaho. These estimates were produced by computer simulations that analyzed decades of daily weather readings in relation to the topography of the area. The results showed that approximately two percent of Idaho landmass is in the highest wind resource categories: Class 5 (excellent), Class 6 (outstanding), and Class 7 (superb). The Cotterel Mountain ridgeline is within these three categories (Figure 1.0-2). In a United States (U.S.) Department of Energy (DOE) study of the potential for renewable resources on public lands, the Cotterel Mountain area is classified as one of 25 BLM planning units with the largest total land area with a Class 5 or greater wind resource (USDI, BLM/DOE 2003).

In late 2000, in response to the electric energy-pricing crisis in California and the Northwest, BPA issued a "Request for Proposals" (RFP) for additional electrical power generated from potential wind energy projects and Windland, Inc. (Windland), a Boise, Idaho company, began to investigate opportunities to respond to BPA's RFP.

In February 2001, Windland submitted an application to the BLM Burley Field Office for a right-of-way (ROW) grant to conduct its own wind testing on Cotterel Mountain. This application was accepted by the BLM (serial number IDI-33675).

In March 2001, Windland followed their first application with a second ROW application to construct, operate and maintain a wind-driven electric power generation facility on Cotterel Mountain. This application was filed by Windland in advance of the proposed meteorological data collection in order to be "first in" consideration for such a project. This second application was accepted by the BLM. Based on the size and scope of the proposed action, the BLM determined that the construction, operation and maintenance of a wind power project on Cotterel Mountain had the potential to result in significant environmental impacts, thereby triggering the need to prepare an Environmental Impact Statement (EIS) to evaluate the proposed action and all reasonable alternatives in compliance with the National Environmental Policy Act of 1969 (NEPA).

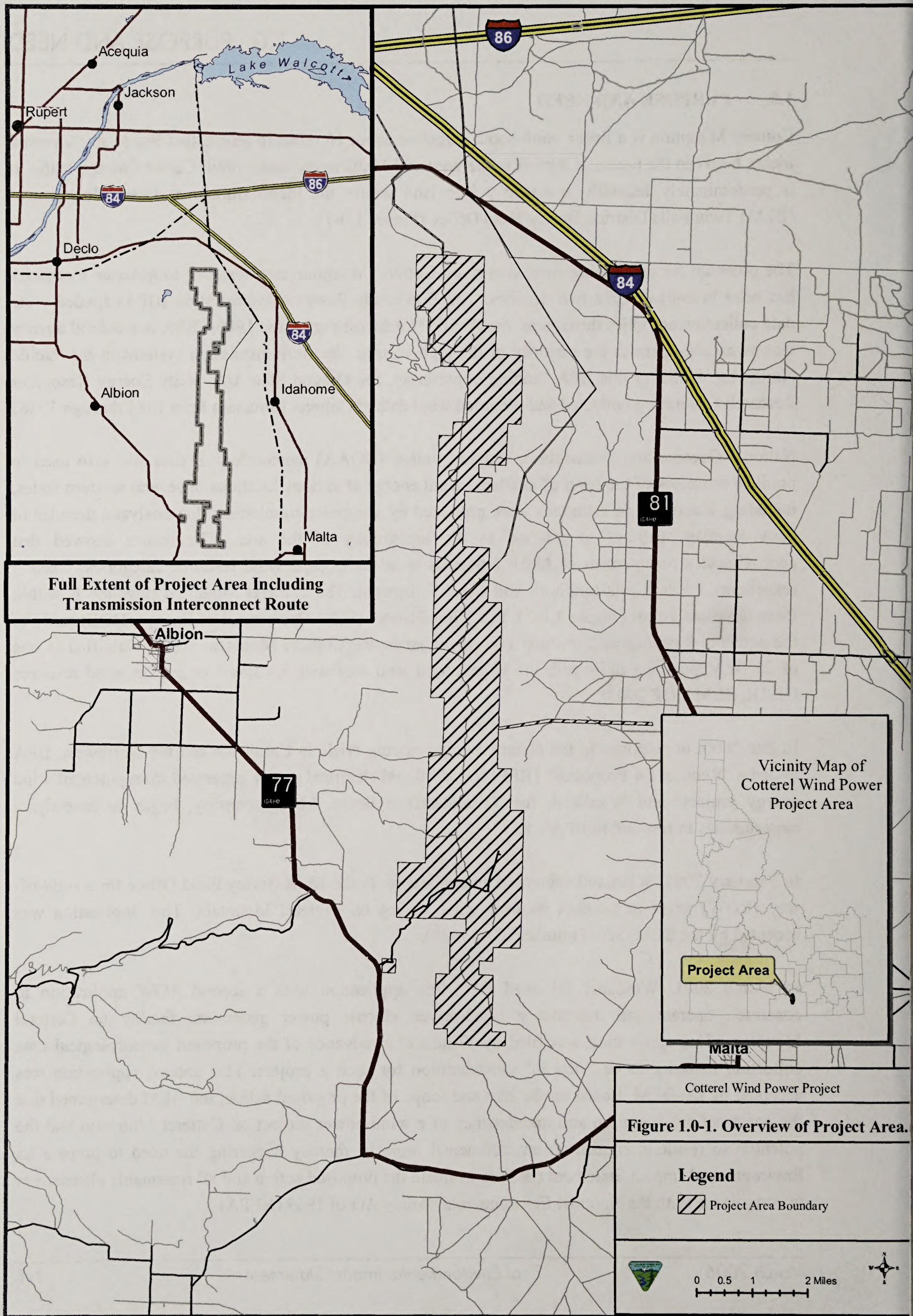
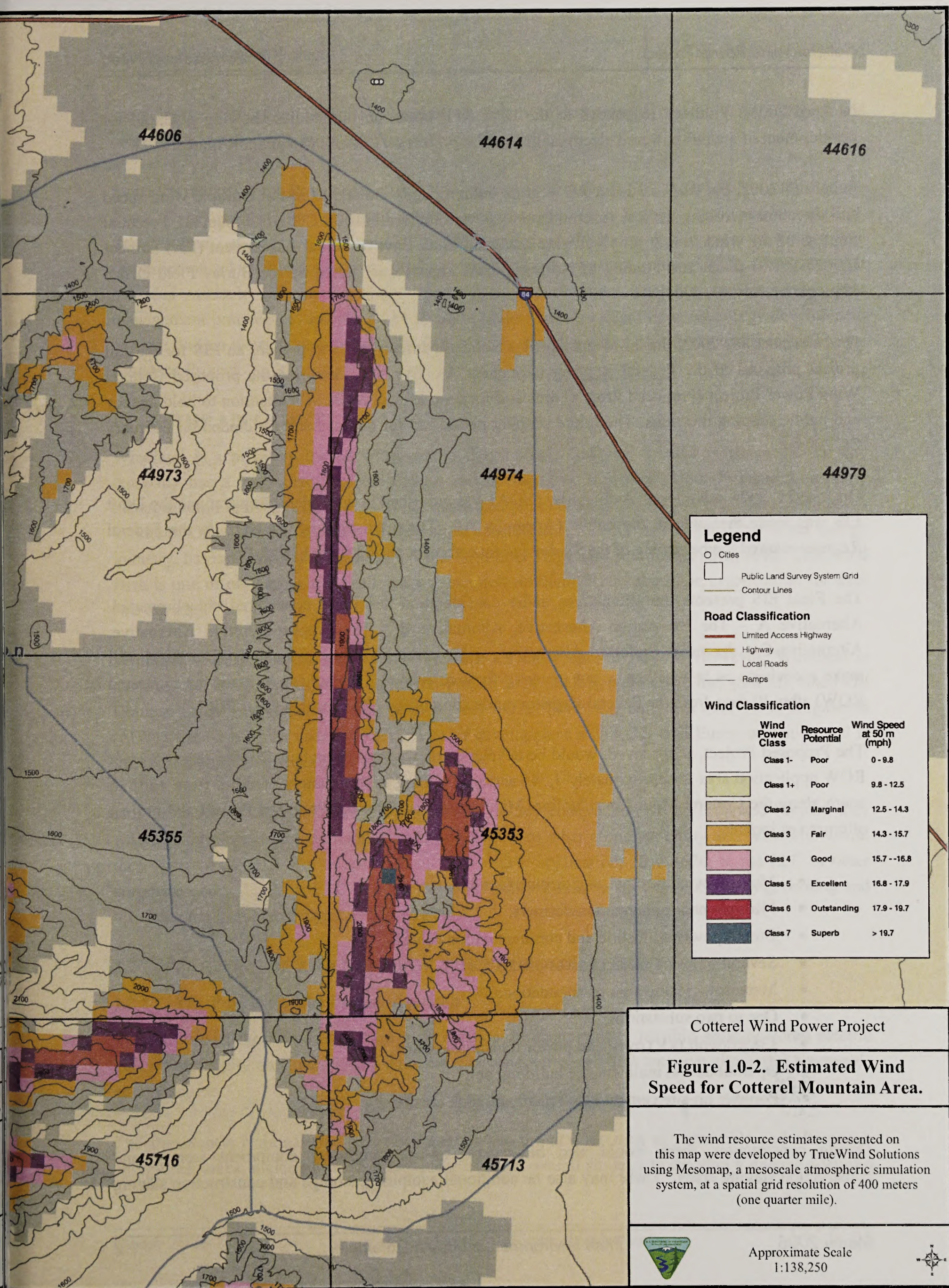


Figure 1.0-1. Overview of Project Area.



In April 2001, Windland responded to the BPA RFP based on the studies showing potential for development of a wind-powered electrical generation project on Cotterel Mountain (Figure 1.0-2).

In July of 2001, the BLM issued a ROW grant authorizing Windland to install multiple wind speed and direction recording devices (anemometers) at various locations on Cotterel Mountain. Potential impacts of the wind testing proposal were analyzed in an Environmental Assessment (EA) number ID-077-EA-01-0063, and Finding of No Significant Impact was signed by the Burley Field Office Manager on July 13, 2001.

On December 19, 2002, the BLM published a Notice of Intent (NOI) to prepare an EIS for the full project proposal in the Federal Register (Appendix A). The NOI identified the proposed Cotterel Wind Power Project (Proposed Project) area and location as well as BLM's intention to hold agency and public scoping meetings. The initial scoping period ran for 60 days and concluded on February 21, 2003.

On June 21, 2005, a Notice of Availability (NOA) was published in the Federal Register and the Draft EIS was made available to the public (Appendix A). The publishing of the NOA in the Federal Register marked the beginning of the 90-day public comment period for the Draft EIS.

The Final EIS presents the alternatives under consideration and those considered but eliminated. Alternative A – The No Action Alternative, Alternative B – The Proposed Action Alternative, Alternative C – Agencies Preferred Alternative, and Alternative D are evaluated. The BLM will make a decision as to whether or not to move forward with the project (or to grant the requested ROW) after 30 days from the Federal Register publication of the NOA for this Final EIS.

The Proposed Project, if approved, would be developed on Cotterel Mountain. The Proposed Project ROW application area is approximately 4,545 acres, extending approximately 16 miles from north to south along the Cotterel Mountain ridgeline. Major components of the Proposed Project and project alternatives include:

- Multiple wind turbines and turbine foundations;
- Multiple pad-mounted transformers;
- Buried power collection and communication cables;
- Several miles of project access roads;
- Meteorological towers on foundations;
- One to two substations;
- 138 kilovolt (kV) overhead power transmission line;
- Operations and maintenance building; and
- Portable on-site cement batch plant and rock crusher.

During construction, there would also be several on-site temporary equipment storage and construction staging areas. There may also be additional equipment storage and construction staging

areas in the vicinity of Cotterel Mountain. A detailed description of the Proposed Project and construction methods are more fully described in Chapter 2.

Since the release of the Proposed Cotterel Wind Power Project Draft EIS, the BLM has published the *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States* to address the future development of wind energy resources on all BLM-administered public lands across the western states (USDI, BLM 2005). It provides valuable information about wind energy development, including recommended best management practices. It amends BLM land use plans that were silent on wind energy development but that had no restrictions precluding it. It is not site-specific and makes no decisions regarding the Proposed Project.

1.1 THE APPLICANT

Windland is a privately owned wind energy development company located in Boise, Idaho. The company has a long history of developing and operating wind power plants. Windland currently manages wind farms in California and has additional projects under and/or proposed for development in Idaho, Oregon and California. Windland is considered a pioneer in the American wind energy industry, having owned and operated a wind farm near Tehachapi, California since 1982. This wind farm is one of only a handful in the nation operated continuously by the same organization for over two decades.

Windland is currently the sole ROW Applicant for the Proposed Project. However, Windland is pursuing the development of the Proposed Project with Shell WindEnergy, Inc. (SWEI). Shell Oil Company (part of the Shell Group) wholly owns SWEI. SWEI currently has over 1,000 megawatts (MW) of wind projects under various stages of development in the U.S. and European Union and is the second largest owner of wind farms in the U.S.

It is the intent of Windland and SWEI that prior to any construction of the Proposed Project, they would jointly form a limited liability company (LLC), or other corporate entity and Windland would then apply to the BLM for an assignment of the ROW application, IDI-33676, to the LLC or other corporate entity. The new LLC or other corporate entity would be used for constructing, owning and operating the Proposed Project.

1.2 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.2.1 The Purpose of the Proposed Action

The purpose of the Proposed Action is to develop an economically feasible wind-powered electric generation facility on Cotterel Mountain, creating an environmentally sensitive alternative renewable energy source.

The President's National Energy Policy encourages the development of renewable and alternative energy resources, including wind energy, as part of an overall strategy to develop a diverse portfolio

of domestic energy supplies (NEPDG 2001). The National Energy Policy also encourages the development of renewable energy. The U.S. Congress and Executive Branch re-instituted a 1.8-cent per kilowatt-hour production tax credit to encourage the development of clean wind energy. This Federal tax credit equals approximately 25 percent of the productive value of a project. These principles are reinforced in the comprehensive Energy Policy Act of 2005.

To date, the BLM has been the only federal agency with wind energy production, with about 510 MW of installed wind power capacity (USGAO 2005). This wind energy development is located in Southern California and Wyoming. As of June 2005, the BLM had authorized 88 applications for wind energy development on their land and had 68 pending applications, most of which are in California and Nevada. There are seven action applications on BLM land in Idaho. Energy development on BLM-administered lands is regulated through its process for granting private parties access to public federal lands, which is referred to as granting a "right-of-way" authorization.

The Department of the Interior (USDI) and, more specifically, the BLM is seeking opportunities to develop renewable energy resources including wind energy. To accomplish this, the BLM in 2005 finalized the Programmatic Wind Energy EIS assuring a common direction and policy for permitting wind facilities on public land. The presence of an adequate wind energy resource is a necessary precondition for an area to be a candidate for development of a wind energy project. The site must also have adequate construction and transmission access. There must be adequate access from the proposed wind project site to existing transmission lines that would carry the power produced by the wind farm to consumers. The proposed Cotterel Mountain site meets these conditions.

1.2.2 The Need for the Proposed Action

The 2003 energy forecast estimated demand for electricity growing in the northwestern U.S. by an annual average of 214 MW (NWPCC 2003). Similarly, the Idaho Power Company (IPC), the largest electric utility in southern Idaho (Figure 1.2-1), predicted a 1.9 percent per year system load growth in the region it serves near the Proposed Project area (IPC 2002). The Proposed Project would provide an alternative renewable energy source in an area that has a demonstrated increasing demand. IPC and PacifiCorp issued (in 2005 and 2003 respectively) RFPs for wind energy in their service districts, actively seeking renewable energy alternatives to traditional energy development. The IPC RFP was for 200 MW and the PacifiCorp RFP was for 500 MW of wind power.

Meeting the need for additional demand for electricity in southern Idaho is complicated by limitations to the capacity of the existing electric transmission resources in that area. In southern Idaho, the transmission of electricity is constrained by certain components in the transmission grid. The term "transmission constraint" refers to a limit in the electrical transmission system that could prevent the delivery of electricity to a portion of the grid. Two transmission constraints in southern Idaho are located near American Falls in southeastern Idaho and near the Brownlee Dam in west-central Idaho (Figure 1.2-2). The Proposed Project lies "inside" these transmission constraints.

Idaho Power Company typically generates 55 percent of its electricity at hydroelectric dams on the Snake River. The amount of hydro-generated electricity varies yearly because of the inter-annual variability of precipitation. During years of poor snow pack conditions less of its electric generation comes from hydro, forcing IPC to increase its reliance on the coal and gas fired plants that it owns and operates at Jim Bridger, Wyoming; Boardman, Oregon; Valmy, Nevada; and Mountain Home, Idaho and on power purchases on the wholesale market (IPUC 2003). Because the inter-annual variability of wind energy is lower than the inter-annual variability of precipitation powering hydro-generated electricity, cost effective wind generated electricity can effectively supplement the current supply of electrical generation in southern Idaho (Figure 1.2-3). Other utilities in the northwestern U.S. (including PacifiCorp, Portland General Electric, and Puget Sound) have identified renewable energy resources (such as wind power) as appropriate resources to meet the growing demand for electricity in their service territories.

The Proposed Project would contribute to meeting the economic needs of Cassia County and the surrounding communities. Cassia County and the surrounding area experienced business closures and work force layoffs. The downturn in employment is primarily the result of a decline in the local food processing industry, which includes the closing of the large Simplot Plant in Heyburn, Idaho, who was a primary employer in the local community.

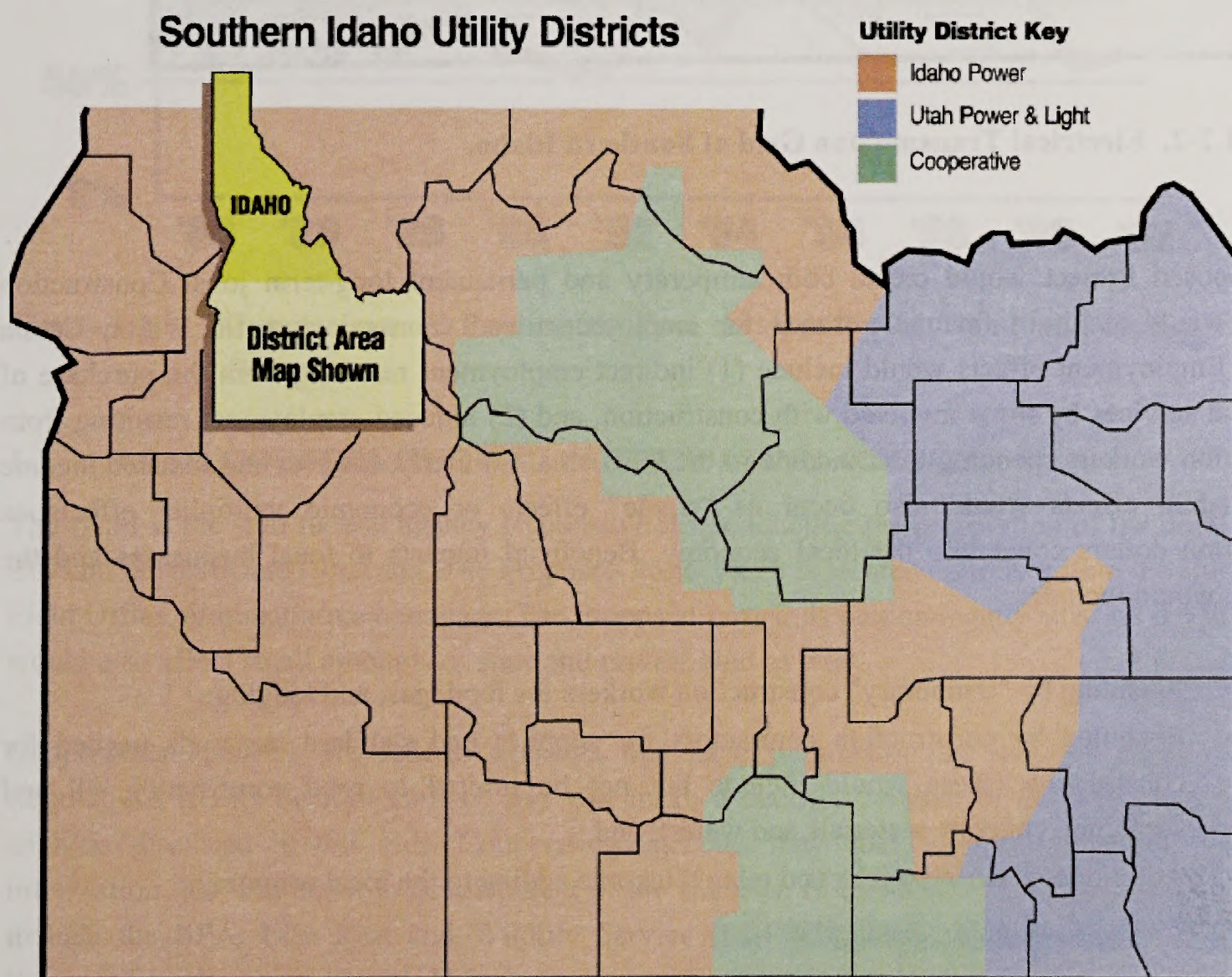


Figure 1.2-1. Southern Idaho Utility Districts.

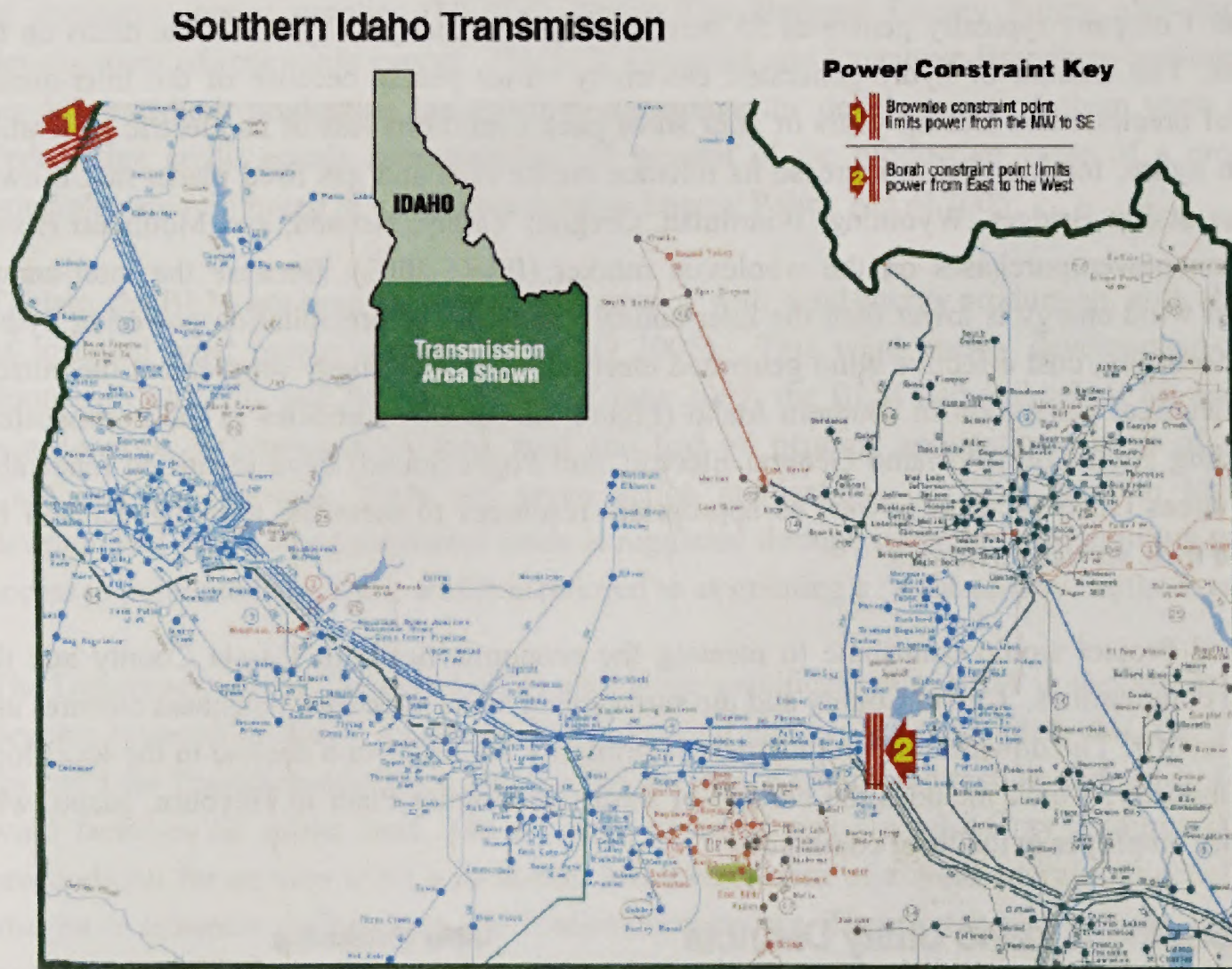


Figure 1.2-2. Electrical Transmission Grid of Southern Idaho.

The Proposed Project would create both temporary and permanent long-term jobs. Construction activity would result in favorable trends for employment and economic benefits within Cassia County. Employment effects would include (1) indirect employment resulting from the purchase of goods and services by firms involved with construction, and (2) induced employment resulting from construction workers spending their income in the local area. Similarly, indirect and induced income and spending effects would also occur as “ripple” effects or economic multiplier effects as construction dollars come into the local economy. Beneficial impacts to local businesses and the economy would include:

- Spending by “temporary” construction workers for food, gas, and lodging;
- Spending by construction contractors for supplies and standard materials needed for construction (these would include but not be limited to road construction fill and surfacing, concrete materials and water); and
- Additional permanent jobs and related income adding to the local economy.

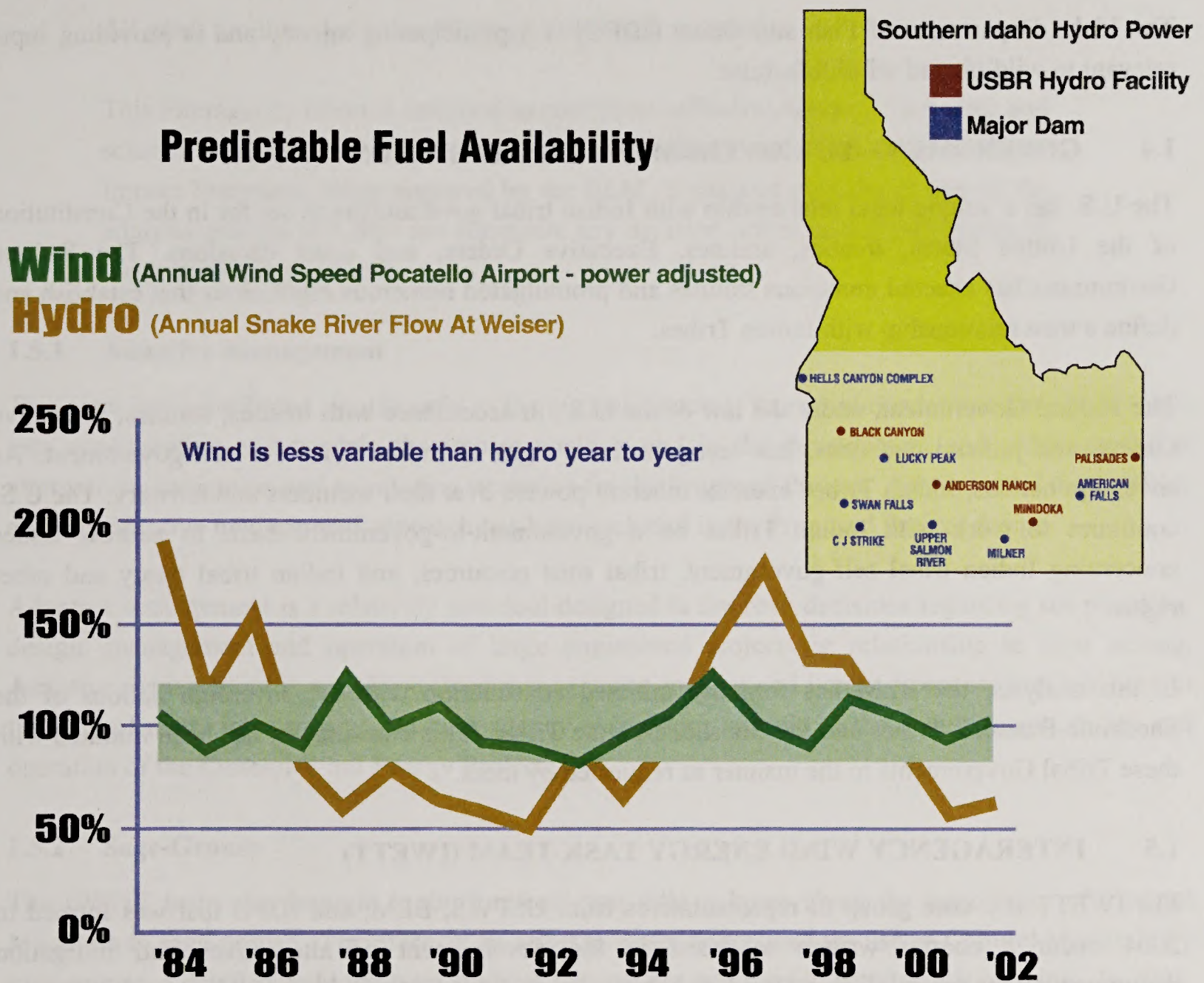


Figure 1.2-3. Comparison of Predictable Fuel Availability of Wind and Hydro Electrical Generation.

1.3 LEAD, COOPERATING AND PARTICIPATING AGENCIES

The BLM is the lead federal agency responsible for conducting the preparation of the draft and final EIS and the associated analysis. The Proposed Project area is located entirely within the Burley BLM Field Office administrative boundary. The Proposed Project is predominantly sited on public land but would also affect small amounts of state and private land as well.

Cooperating agencies are federal agencies that have jurisdiction by law (40 Code of Federal Regulations (CFR) Section 1501.6) and will make a decision relative to the project based on the analysis disclosed in this EIS. Cooperating agencies may also have special expertise or have information that will assist in development of the analysis. In this analysis, the cooperating agencies include the BPA, U.S. Fish and Wildlife Service (USFWS), Idaho Department of Lands (IDL), Bureau of Reclamation (BOR), U.S. Army Corp of Engineers, the Minidoka County Commissioners, and Cassia County Commissioners, representing the local government.

The Idaho Department of Fish and Game (IDFG) is a participating agency and is providing input relevant to wildlife and wildlife habitat.

1.4 GOVERNMENT-TO-GOVERNMENT CONSULTATION

The U.S. has a unique legal relationship with Indian tribal governments as set for in the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. The Federal Government has enacted numerous statutes and promulgated numerous regulations that establish and define a trust relationship with Indian Tribes.

The Federal Government, under the law of the U.S., in accordance with treaties, statutes, Executive Orders, and judicial decisions, has recognized the right of Indian Tribes to self-government. As sovereign nations, Indian Tribes exercise inherent powers over their members and territory. The U.S. continues to work with Indian Tribes on a government-to-government basis to address issues concerning Indian tribal self-government, tribal trust resources, and Indian tribal treaty and other rights.

In this analysis, the BLM has formally initiated consultation with the sovereign nations of the Shoshone-Bannock Tribes and the Shoshone-Paiute Tribes. This consultation has been initiated with these Tribal Governments in the manner as requested by them.

1.5 INTERAGENCY WIND ENERGY TASK TEAM (IWETT)

The IWETT is a core group of representatives from USFWS, BLM, and IDFG that was formed in 2004 under a charter written to assist in the development of alternatives and mitigation recommendations for wildlife and wildlife habitat. Its guiding charter is displayed below:

IWETT Charter

“This charter sets the goals of the Interagency Wind Energy Task Team in relationship to the Cotterel Wind Energy Proposal, presently being analyzed by the Bureau of Land Management (BLM) in Burley, Idaho. This team consists of representatives from the BLM, U.S. Fish & Wildlife Service, and Idaho Department of Fish & Game. Technical guidance relevant to the construction, operation and maintenance of a wind energy development will be provided by the applicant, Windland, Inc. and co-developer, Shell WindEnergy, Inc. The goals are as follows:

- Review baseline technical reports and data;
- Assist and contribute to the development of mitigation measures;
- Assist and contribute to development of adaptive management strategies;
- Assist with development and/or further enhancement of alternatives; and
- Identify additional data needs, if appropriate.

All goals are intended to be achieved in a timely manner.

This interagency effort is intended to contribute collective agency experience and scientific expertise to the development of the Draft and Final Environmental Impact Statement being prepared by the BLM. It shall be considered part of the analysis process and does not constitute any decision action on the part of any of the participating parties.”

1.5.1 Adaptive Management

This team has contributed significantly to the analysis process. Its recommendations have been taken into consideration and used in the impact analysis and in the development and enhancement of alternatives, mitigation and monitoring strategies for the Proposed Project. As a result of these efforts a strong adaptive management approach has been included in the Proposed Project design.

Adaptive management is a relatively new tool designed to improve decisions regarding the planning, design, management and operation of large engineered projects in relationship to their setting. Adaptive management is a highly-valued management concept and iterative process that has been at the core of many inter-agency and intra-agency discussions specific to the development, design and operation of the Cotterel Wind Energy Project.

1.5.2 Sage-Grouse

The IWETT team also brought to the forefront that little is known about the importance of Cotterel Mountain to sage-grouse. Therefore, in an effort to better understand the use of Cotterel Mountain by sage-grouse, a detailed and long-term study of this species was implemented and is ongoing. In 2003, 2004, and 2005, sage-grouse lek surveys and lek counts were conducted on Cotterel Mountain. A radio telemetry study was initiated in the spring of 2004 and is ongoing. The results of these studies would be used to provide pre-construction data to serve as a baseline against which to evaluate the impacts of the Proposed Project, if approved, on Cotterel Mountain sage-grouse.

1.5.3 Cumulative Effects

The IWETT team also discussed the importance of cumulative effects. Resulting from the discussion is a comprehensive analysis of cumulative effects beginning in Section 4.16 in Chapter 4 of this document.

1.6 CONFORMANCE WITH EXISTING LAND USE PLAN

The BLM existing Cassia Resource Management Plan, 1985 (Cassia RMP) limits ROW to existing facilities and locations and does not address wind energy development. At the time of preparation of the Cassia RMP, Cotterel Mountain was not considered as a wind energy site. In addition, the proposed action is not consistent with the Cassia RMP. The Cassia RMP states that BLM will not approve any additional ROW authorizations in Management Unit 11. An amendment to the Cassia RMP is being proposed and evaluated in this Final EIS. The NOI also states the BLM's intention to

amend the Cassia RMP. The proposed amendment would revise the existing restrictions that limit ROW development in the Cotterel Mountain Management Area. The amendment would allow for the granting of a ROW for the development of the Proposed Project. This proposed action and alternatives are consistent with the Cassia RMP in meeting all other land management objectives.

1.7 SCOPING

In December 2002, a scoping statement was mailed to government agencies, municipalities, Native American Tribes, grazing permittees, lease operators, industry representatives, environmental organizations, and individuals having a potential interest in the Proposed Project. Local and regional media also received the scoping statement and a press release. The scoping statement explained the Proposed Project and requested comments regarding issues and concerns that should be addressed in the Draft EIS. Three public scoping meetings were held in the towns of Albion on January 7, 2003; Burley on January 8, 2003; and Boise, Idaho on January 9, 2003, with 135 total attendees. Initial scoping comment letters were encouraged through February 21, 2003 to help the BLM identify issues that would guide the formulation of alternatives to the proposed action. Written comments were received from 47 individuals, three Federal and state agencies, and five interest groups. A list of all respondents is presented in Chapter 5.

On June 21, 2005, a Notice of Availability (NOA) was published in the Federal Register and the Draft EIS was made available to the public (Appendix A). The publishing of the NOA in the Federal Register marked the beginning of the 90-day public comment period for the Draft EIS. During the comment period, interested parties were invited to submit comments on the Draft EIS to the BLM. A second round of public scoping meetings were held to describe the content of the Draft EIS and to receive public comments. Public meetings were held: Tuesday July 26, 2005 in Burley, Idaho; Wednesday July 27 in Albion, Idaho; and Thursday July 28, 2005 in Boise, Idaho.

This Final EIS incorporates revisions to the Draft EIS made in response to comments submitted during the 90-day public comment period. During the public comment period, 72 written comments were received by the BLM. The comments received during the public comments period and responses to the comments are provided in Appendix H of the Final EIS.

1.7.1 Significant Issues Identified and Used to Develop Alternatives

NEPA requires Federal agencies to identify and analyze significant issues related to a proposed action and its alternatives. Significant issues primarily serve as the basis for developing and comparing alternatives. While the focus of the analysis is on significant issues identified, all issues brought forward through the scoping process are considered. The following is a list of significant issues identified by the public, Shoshone Bannock Tribes, the Shoshone Paiute Tribes, BLM, and other governmental organizations that were used to develop alternatives and assess impacts of the Proposed Project. The significant issues addressed in this Final EIS include:

- Sage-grouse – Commentors were concerned that the Proposed Project would result in the loss of sage-grouse habitat, loss of nesting habitat and disturbance to leks. Grouse could also be killed by colliding with wind turbines.
- Tribal treaty rights or heritage links to public lands – The Tribes expressed a desire that these be maintained and protected.
- Migratory birds including raptor migration – Commentors expressed concern over migratory birds being killed by colliding with wind turbines.
- Public access – Commentors expressed the need to continue to allow and protect public access to Cotterel Mountain.
- Visual resources – Commentors expressed concern about the visual impact to the town of Albion and other communities, as the Proposed Project would be in close proximity to towns, ranches, and homes.
- Conformance with the Cassia RMP – Internal review disclosed the proposed action was not in conformance with the Cassia RMP and an amendment would be required.

1.7.2 Other Issues and Concerns Addressed

Other issues and concerns were identified by the public, BLM, Shoshone Bannock Tribes, Shoshone Paiute Tribes, and other governmental organizations regarding the Proposed Project and its alternatives. They are listed below and described in more detail in Chapter 3 of this Final EIS.

- Air Quality
- Ridgeline and cultural significance to Tribes
- Historical migrations routes of Tribes
- Geology
- Soils
- Water Resources (including surface, groundwater, and springs)
- Noise/vibration/harmonics
- Vegetation
- Noxious weeds
- Wildlife
- Wind turbine effects on birds and bats
- Direct and indirect wildlife habitat loss
- Mule deer winter range
- Increased human activity on Cotterel Mountain and its effects on wildlife
- Threatened, Endangered, and Sensitive Species and their habitats
- Cultural and historical resources

- Socioeconomics
- Land use
- Private land values
- Increased traffic on local roads during construction
- Livestock grazing
- Recreation

1.7.3 Why Cotterel Mountain and not Elsewhere?

The EIS addresses creating power with wind energy, but does not address other locations for the Proposed Project. The Applicant's proposal identified the Proposed Project area for development. The wind resource in southern Idaho has been studied since the 1980s. The results showed that less than two percent of the Idaho landmass is in the top three wind resource categories: Class 5 (excellent), Class 6 (outstanding), and Class 7 (superb). The majority of the Cotterel Mountain ridgeline is within one of these three categories. Based on the above-mentioned studies and wind data collection that the Applicant completed, the Proposed Project site has a proven wind resource suitable for producing electricity at competitive prices. Other possible project site locations could jeopardize project feasibility because of a lack of sufficient wind resource or remoteness from nearby power transmission lines or barriers to access by construction equipment.

1.7.4 Issues Deemed Outside the Scope of the EIS

Some issues were found to be outside of the scope of the EIS. These included management direction or habitat suitability assessments for the reintroduction of big horn sheep into the Cotterel Mountain. The potential impacts of the Proposed Project to the suitability of the Cotterel Mountain for reintroduction of big horn sheep will not be addressed in the EIS. The loss of sage-steppe habitat for sage-grouse will be assessed as it relates to the Proposed Project. However, it is outside the scope of this EIS to assess the loss of sage-steppe habitat from a range management standpoint in regard to grazing. The issue of whether or not the wind turbines would be manufactured in the U.S. was deemed outside the scope of the EIS because the source and manufacturer of the turbines will have no effect on the development or analysis of the alternatives. Other issues of concern included the need for development of all forms of renewable energy.

1.8 FEDERAL AND STATE AUTHORITIES AND ACTIONS

Table 1.8-1 lists all authorizing actions required for project compliance with all relevant Federal and state laws. The development of energy resources is part of the BLM management program under the authority of the Federal Land Policy and Management Act of 1976. The development of energy-generation facilities is an integral part of the President's National Energy Policy, which encourages the development of renewable energy resources, including wind energy, as part of an overall strategy to develop a diverse portfolio of domestic energy supplies for the nation's future and decrease reliance on external suppliers.

Table 1.8-1. Federal and State Authorities and Actions for the Proposed Project.

Agency	Action	Authority
U.S. Bureau of Land Management	Draft EIS, Final EIS, Cassia RMP Amendment, and Record of Decision preparation	NEPA, 40 CFR Parts 1500-1508; Federal Land Policy and Management Act of 1976 (as amended), Public Law 94-579
	ROW grant	U.S. Department of the Interior, Federal Land Policy and Management Act of 1976 (as amended) Public Law 94-579; 43 CFR 2800
	Notice to Proceed	BLM Manual H-2801-1 ROW Plan of Developments
Bonneville Power Administration	Cooperating agency - support renewable energy sources ROW crossing permit	Public Law 96-501
	Interconnection approval	BPA Open Access Tariff
U.S. Bureau of Reclamation	Granting of ROW	
U.S. Environmental Protection Agency	Permit for treatment, storage, or disposal of hazardous wastes	Resource Conservation and Recovery Act
	Air Quality	Clean Air Act as amended 1990
	Construction Stormwater Permit	Clean Water Act as amended 1977
U.S. Fish and Wildlife Service	Cooperating agency. Review impact on federally listed or proposed TES species of fish, wildlife, plants, and migratory birds	Fish and Wildlife Coordination Act of 1934, as amended 1946, 1977 (16 U.S.C. 661-667e); Endangered Species Act of 1973 (16 U.S.C. Sections 1531 <i>et seq.</i>); Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703 <i>et seq.</i>); Eagle Act (16 U.S.C. 668-668d)
	Preparation of Biological Opinion of potential project impacts on Threatened and Endangered species	
	Provides input on recommended mitigation measures	
Idaho Department of Fish and Game	Review impact, wildlife, and wildlife habitat and assist in developing mitigation measures	Fish and Wildlife Coordination Act of 1934, as amended 1946, 1958, 1977 (U.S.C. 661-667e)
Idaho Department of Lands	Granting of ROW	State of Idaho Administrative Rule 20.03.08 Easements on State Owned Land

Table 1.8-1. Federal and State Authorities and Actions for the Proposed Project.

Agency	Action	Authority
Idaho Department of Environmental Quality	Permit for Concrete Batch Plant Permit for Mobile Rock Crusher Air Quality	Administrative Rule 5801200 and Permit by Rule requirements 5801795 Clean Air Act as amended 1990
Idaho State Historic Preservation Office	Consult with BLM on-site eligibility and the effects of the Proposed Project on eligible sites Provide determination of eligibility	National Historic Preservation Act of 1966, as amended (16 U.S.C. 470)
U. S. Bureau of Alcohol, Tobacco and Firearms	Explosives for turbine foundation blasting	CFR Title 27, Alcohol, Tobacco and Firearms, Revised April 1, 2003
South Central District Health Department	O&M Building Septic System	IDAPA 58 Title 01 Chapter 3 Rules for Individual Subsurface Sewage Disposal
Idaho Transportation Department	Oversize Load Permits	IDAPA 39 Title 03 Chapter 13
Federal Highway Administration	Transmission line crossing Interstate 84	CFR Title 23, Highways
Federal Aviation Administration	Determination of No Hazard to Air Navigation	CFR Title 14 Acronautics and Space Federal Aviation Regulations

1.9 DECISIONS TO BE MADE

1.9.1 Bureau of Land Management

The BLM will make a decision whether or not to grant a ROW to allow for the construction, operation, and maintenance of the Proposed Project on federal lands. The BLM will also make a decision whether or not to amend its existing Cassia RMP, which will allow for the granting of the ROW if so decided. Both decisions will be outlined in a Record of Decision, based on the outcome of the EIS. If the Record of Decision is to grant the ROW, the ROW grant would only be issued upon completion and approval of Plan of Development. The Plan of Development would also be made a part of the ROW Grant.

1.9.2 Bonneville Power Administration

The BPA will make a decision whether or not to offer contract terms for the interconnection of the Windland project to the Federal Columbia River Transmission System (FCRTS) if necessary. BPA has adopted an Open Access Transmission Tariff for the FCRTS, consistent with the Federal Energy Regulatory Commission's (FERC) *pro forma* open access tariff*. Under BPA's tariff, BPA offers transmission interconnection to the FCRTS to all eligible customers on a first-come, first-served basis.

*Although BPA is not subject to FERC's jurisdiction, BPA follows the open access tariff as a matter of national policy. This course of action demonstrates BPA's commitment to non-discriminatory access to its transmission system and ensures that BPA will receive non-discriminatory access to the transmission systems of utilities that are subject to FERC jurisdiction.

1.9.3 U.S. Bureau of Reclamation

The BOR will make a decision on whether or not to grant a ROW for a portion of any transmission line that would cross lands managed by the BOR.

1.9.4 U.S. Fish & Wildlife Service

The USFWS will issue a Biological Opinion based on the Biological Assessment of impacts to threatened and endangered species.

1.9.5 Idaho Department of Lands

The IDL will make a decision whether or not to grant a ROW for a portion of any transmission line, any wind turbines, or any access roads that would cross state land.

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CHAPTER 2

PROPOSED ACTION AND ALTERNATIVES

2.0 PROPOSED ACTION AND ALTERNATIVES

The purpose of this chapter is to identify and describe the alternatives (potential actions) associated with the proposed Cotterel Wind Power Project (Proposed Project) including the Proposed Action and No Action Alternatives. Under the National Environmental Policy Act (NEPA), agencies must:

“rigorously explore and objectively evaluate all reasonable alternatives and for alternatives which are eliminated from detailed study, briefly discuss the reasons for their having been eliminated [(40 Code of Federal Regulations (CFR) 1502.14(a))].”

Section 1502.14 requires the Environmental Impact Statement (EIS) to examine all reasonable alternatives to the proposal. In determining the scope of alternatives to be considered, the emphasis is on what is “reasonable” rather than whether the Applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are technically and economically practical, are feasible, and use common sense, rather than simply desirable from the standpoint of the Applicant (Council of Environmental Quality (CEQ) 4646 FR 18026 [March 23, 1981] as amended).

The proposed Cotterel Mountain Wind Power Project would be located in Cassia and Minidoka counties in south-central Idaho near the communities of Albion, Malta, Declo and Burley. The Proposed Project area is located approximately 52 miles east of Twin Falls, approximately 60 miles west of Pocatello, and 24 miles north of the Idaho/Utah state line (Figure 2.1-1). The Proposed Project area is accessible from Interstate 84 (I-84), State Routes 81 and 77. Existing dirt roads throughout the Proposed Project area provide general access to the Cotterel Mountain Ridgeline and to microwave and communication towers located at the Cotterel Mountain Summit.

2.1 PROPOSED ACTION AND RANGE OF ALTERNATIVES

This Final EIS considers four alternatives:

- Alternative A: The No Action Alternative
- Alternative B: Applicant’s Proposed Action
- Alternative C: Agencies Preferred Alternative with fewer but larger output wind turbines, alternative access, alternative transmission line locations and alternative turbine types
- Alternative D: Modification of Alternative C with a reduced number of wind turbines

These alternatives have been developed in accordance with CEQ regulations to provide decision-makers and the public with a clear basis for choice (40 CFR 1502.14). A detailed description of these alternatives is provided below. If selected, Alternative B, C and D would require amending the Cassia Resource Management Plan (RMP). Alternative A would not require an amendment to the RMP.

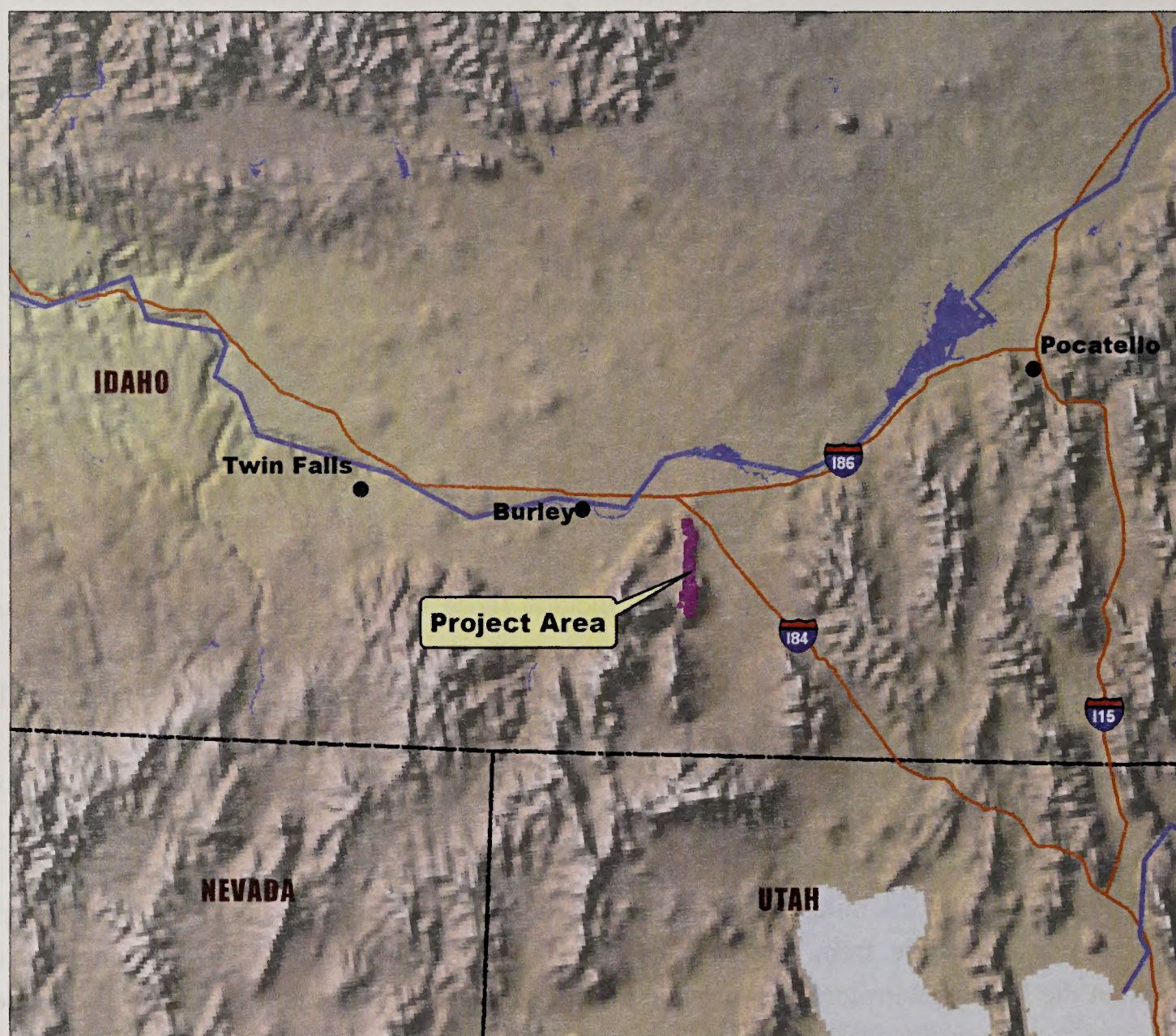


Figure 2.1-1 Project Vicinity Map

2.1.1 Alternatives Considered and Eliminated from Detailed Study

The Bureau of Land Management (BLM) considered two alternatives (Alternatives E and F) that were not carried forward or analyzed in detail. One alternative was proposed as a modification of Alternative D, which attempted to achieve a greater balance between reducing the potential for impacts to sage-grouse habitat and habitat use while maintaining an economically viable wind energy development. The alternative attempted to avoid the most direct suspected impacts to sage-grouse lek use and associated nesting at several key locations on the mountain by eliminating turbines from those areas. This substantially reduced the number of turbines allowed. The other alternative focused on the complete protection of sage-grouse and minimizing possible impacts by severely reducing the numbers of turbines allowed. A description of these alternatives and brief rationale for why they are not analyzed in detail is disclosed in Section 2.7.

2.2 ALTERNATIVE A (NO ACTION)

Background: As required by NEPA, this Final EIS includes Alternative A, a No Action Alternative as the baseline against which the action alternatives can be compared. This baseline also allows for the disclosure of the effects of not developing the proposed wind power project and its associated

infrastructure. For purposes of this analysis, Alternative A assumes that no actions associated with the Proposed Project would occur, and existing management of the area would continue to be implemented under the Cassia RMP; therefore, an amendment to the Cassia RMP would not be required for this alternative.

Description of Alternative A: Under Alternative A, the Rights-of-Way (ROW) grant for the construction, O&M of a wind-powered electrical generation facility would not be granted and the RMP would not be amended by the BLM. This alternative would maintain current management practices for resources and allow for the continuation of resources uses at levels identified in the Cassia RMP. This alternative would also incorporate any management decisions that have been made subsequently to the Cassia RMP. This alternative generally satisfies most commodity demands of public lands, while mitigating impacts to sensitive resources. It includes moderate levels of resource protection and development including: wildlife habitat protection; range improvements; vegetation treatments; soil erosion controls; and fire management. In addition, livestock use, recreation activities (including off-highway vehicle use), timber harvest, and land development (energy and communication) would continue at present levels. However, these levels would be subject to adjustments when monitoring studies indicate changing resource conditions or trend has occurred. ROW would also continue to be limited to those allowed under the current RMP.

2.3 PROPOSED PROJECT FEATURES COMMON TO ALL ACTION ALTERNATIVES

The Proposed Project action alternatives would consist of access roads, wind turbines interconnected by a network of utility-grade facilities consisting of transformers at the base of each turbine, underground electric collection lines, substation(s), and transmission interconnect line(s) for connection to the existing utility grid. There would also be several wind speed measuring meteorological towers and an operations and maintenance (O&M) facility sited within the Proposed Project area. All of the wind turbine control systems would be connected by a communications system for computerized automated monitoring of the entire project. A temporary cement batch plant, rock crusher, and construction operation trailer pad would also be located on-site.

The Proposed Project involves one to three linear strings of wind turbine towers that would be sited on three distinct ridgelines on Cotterel Mountain. The towers within each string would be sited approximately one-quarter mile apart. The proposed Cassia RMP amendment is specific to the Cotterel Wind Power Project. No other wind energy projects will be permitted on Cotterel Mountain.

Understanding how a wind power generating facility functions helps better understand the potential effects to resources and other public use of the area and aids in developing responsive management strategies to avoid, reduce and mitigate these effects wherever possible along the turbine string.

The Proposed Project is projected to operate at 0.35 (35%) capacity factor under optimum wind conditions. This means that the project generates 0.35 (35%) of its total nameplate capacity because the wind does not always blow at a speed high enough to turn the blades of the turbines and generate

electricity; and at times it blows so fast, i.e., during storms, that the blades are feathered or braked (stopped).

This is not to say that all of the turbines in a project are running 35 percent of the time or that they all are not running 65 percent of the time. Each turbine functions independently of each other. The turbine blades begin to turn when the wind reaches speeds of approximately eight to nine miles per hour or greater. When wind speeds exceed approximately 55 miles per hour, the blades are feathered and turned out of the wind.

Naturally, wind speeds are variable along the length of a mountain ridge. As you move along a 12 to 14 mile turbine string, as is proposed on Cotterel Mountain, each turbine turns independently of the others according to the wind speed at its location. The observer will normally see that some turbines are turning and others are not turning at any given time. Rarely would all the turbines be either turning or not turning at the same time. Each turbine operates as a single entity; some may generate 45 percent of the time and others only 25 percent of the time because of their location on the mountain (it is only the overall project average that is 35%). In summary, it is difficult to predict at what time and how long any one turbine would be turning.

2.3.1 General Features of the Wind Power Project

The Wind Turbines

Wind turbines consist of three main physical components that are assembled and erected during construction: the tower; the nacelle; and the rotor blades. The modern wind turbines under consideration for the Proposed Project have tower heights that range from 210 to 262 feet and rotor diameters that range from 230 to 328 feet (Figure 2.3-1). The number of turbines proposed would range from 66 to 130 depending on the alternative.

Tower: The tower is a tubular freestanding, painted steel structure that is manufactured in multiple sections depending on the required height. Towers are delivered to the site and erected in two or three sections each. Each section is bolted together via an internal flange. An access door is located at the base of each tower. An internal ladder runs to the top of the tower just below the nacelle. The tower is equipped with interior lighting.

Nacelle: The gearbox, generator, and various control equipment are enclosed within the nacelle, which is the housing of the unit that protects the turbine mechanics from environmental exposure. A yaw system is mounted between the nacelle and the top of the tower on which the nacelle resides. The yaw system, which is comprised of a bearing surface for directional rotation of the turbine and a drive system consisting of a drive motor(s) to keep the turbine pointed into the wind to maximize energy capture. A wind vane and anemometer are mounted at the rear of the nacelle to signal the controller with wind speed and direction information.

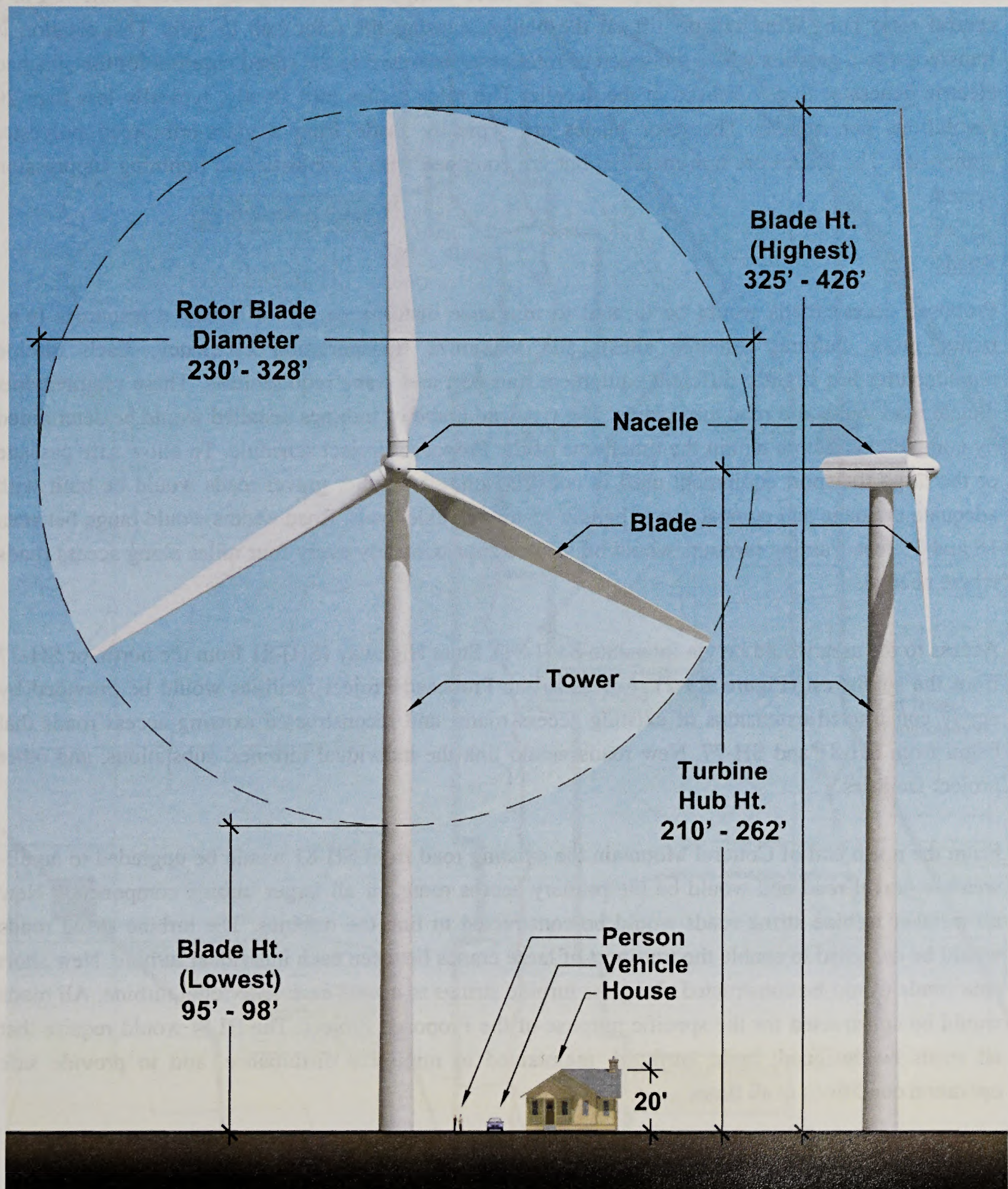


Figure 2.3-1. Diagram of a Typical Wind Turbine.

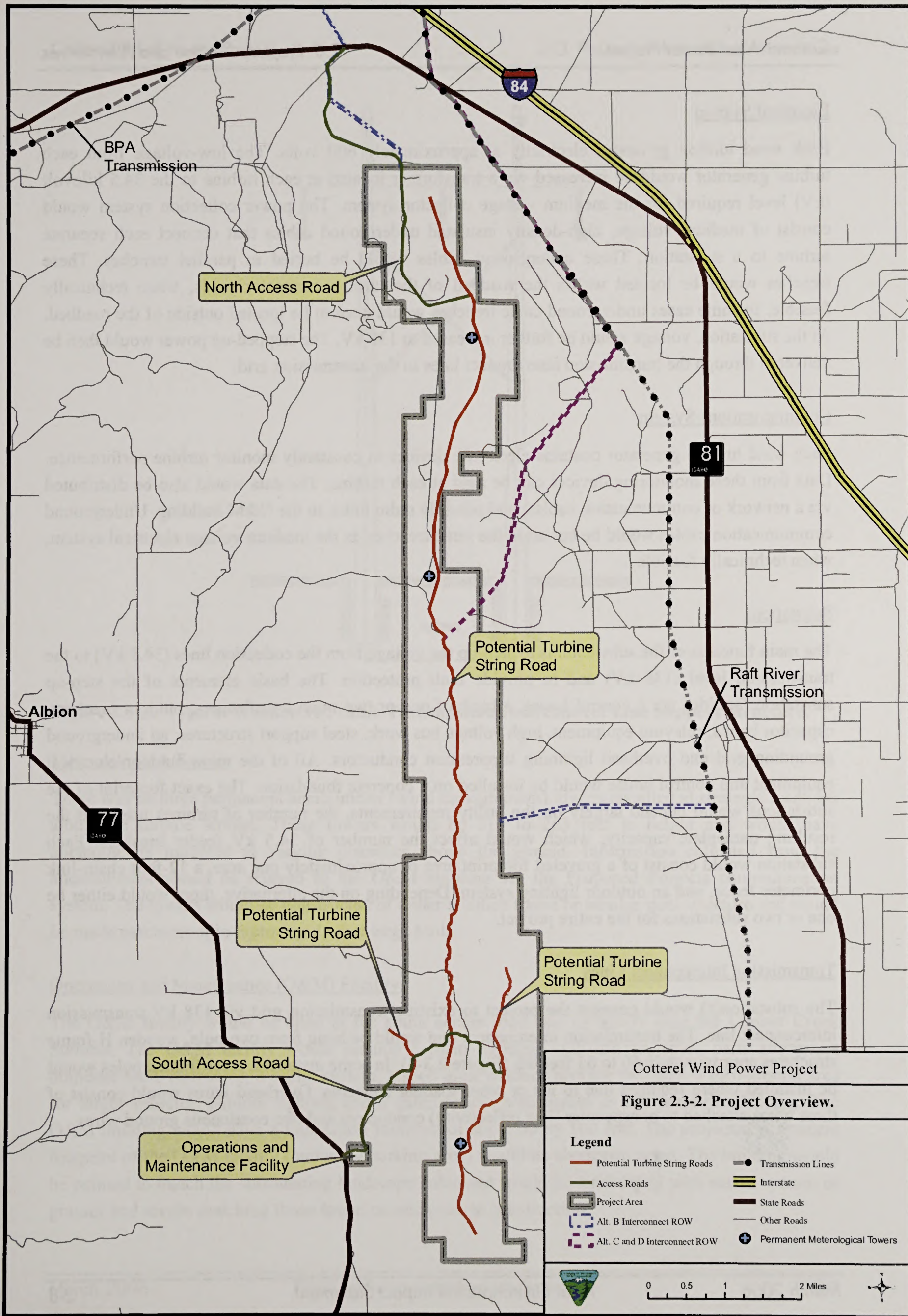
Rotor Blades: Wind turbines are powered by three composite or fiberglass blades connected to a central rotor hub. Wind creates lift on the blades, causing the rotor hub to spin. This rotation is transferred to a gearbox where the speed of rotation is increased to the speed required for the attached electric generator that is housed in the nacelle. The rotor blades turn slowly, typically less than 20 revolutions per minute. The rotor blades are typically made from a glass-reinforced polyester composite. The blades are non-metallic, but are equipped with a sophisticated lightning suppression system.

Roads

Proposed access roads would be located to minimize disturbance, avoid sensitive resources (e.g., raptor nests, cultural resource sites), and maximize transportation efficiency. Each turbine manufacturer has slightly different equipment transport and crane requirements. These requirements dictate road width and road turn radius. The type and brand of turbines installed would be determined by commercial factors within the timeframe of the Proposed Project schedule. To allow safe passage of the large transport equipment used in construction, all-weather gravel roads would be built with adequate drainage and compaction to handle 15-ton per axle loads. Road widths would range between 16 and 35 feet. Passing turnouts would be located approximately every four miles along access roads where needed.

Access to the area would be via Interstate 84 (I-84), State Highway (SH)-81 from the north, or SH-77 from the southwest (Figure 2.3-2). Access to the Proposed Project facilities would be provided by newly constructed extensions of existing access roads, and reconstructed existing access roads that begin from SH-81 and SH-77. New roads would link the individual turbines, substations, and other project facilities.

From the north end of Cotterel Mountain the existing road from SH-81 would be upgraded to an all-weather gravel road and would be the primary access route for all larger turbine components. New all-weather turbine string roads would be constructed to link the turbines. The turbine string roads would be designed to enable the transport of large cranes between each individual turbine. New short spur roads would be constructed along the turbine strings to access each individual turbine. All roads would be constructed for the specific purpose of the Proposed Project. The BLM would require that all roads be designed, built, surfaced, maintained to minimize disturbance, and to provide safe operation conditions at all times.



Cotterel Wind Power Project

Figure 2.3-2. Project Overview.

Electrical System

Each wind turbine generates electricity at approximately 600 volts. The low-voltage from each turbine generator would be increased via a transformer located at each turbine to the 34.5 kilovolt (kV) level required for the medium voltage collector system. The power collection system would consist of medium voltage, high-density insulated underground cables that connect each separate turbine to a substation. These underground cables would be buried in parallel trenches. These trenches would be located within the roadbed of the turbine connector roads, when technically feasible. In some cases underground cable trenches would need to be located outside of the roadbed. At the substation, voltage would be further increased to 138 kV. The stepped-up power would then be delivered through the transmission interconnect lines to the transmission grid.

Communications System

Each wind turbine generator contains electronic devices to constantly monitor turbine performance. Data from these monitoring devices can be read at each turbine. The data would also be distributed via a network of communication cables, and possibly radio links, to the O&M building. Underground communication cables would be buried in the same trenches as the medium voltage electrical system, when technically feasible.

Substations

The main function of the substation is to step-up the voltage from the collection lines (34.5 kV) to the transmission level (138 kV) and to provide fault protection. The basic elements of the step-up substation facilities are a control house, a bank of one or two main transformers, outdoor breakers, capacitor banks, relaying equipment, high voltage bus work, steel support structures, an underground grounding grid and overhead lightning suppression conductors. All of the main outdoor electrical equipment and control house would be installed on a concrete foundation. The exact footprint of the substations would depend largely on the utility requirements, the number of turbines used and the resulting nameplate capacity, which would affect the number of 34.5 kV feeder breakers. Each substation would consist of a graveled footprint area of approximately one acre, a 12-foot chain-link perimeter fence, and an outdoor lighting system. Depending on the alternative, there would either be one or two substations for the entire project.

Transmission Interconnect Lines

The substation(s) would connect the project to existing transmission grid via 138 kV transmission interconnect line. The transmission interconnect line would be hung from two-pole, wooden H-frame structures approximately 60 to 65 feet tall (Figure 2.3-3). In some instances, steel-framed poles would be installed where required due to ice or other loading concerns. Overhead wires would consist of three wires attached to nonspecular (low reflectivity) conductors and two continuous ground wires.

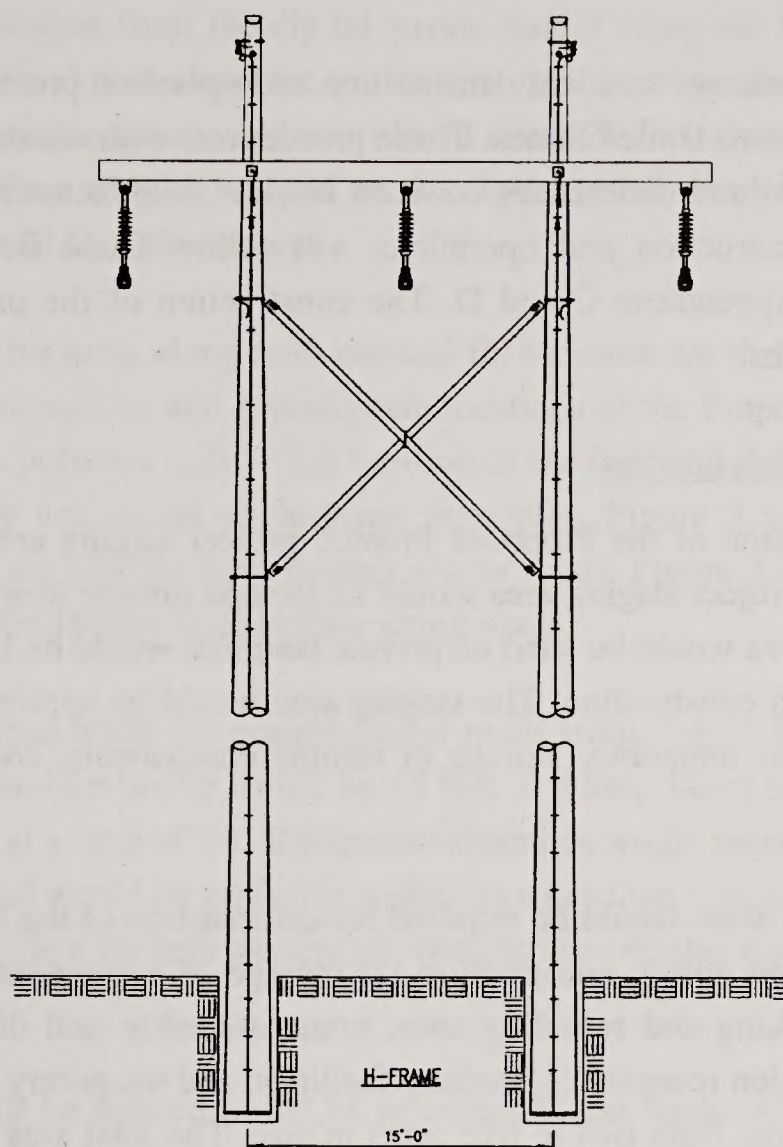


Figure 2.3-3. Typical Wooden H-Frame Transmission Interconnect Line Support Structure.

Meteorological Towers

There will be three permanent anemometer (wind measurement) towers installed at strategic locations along the turbine strings. These towers would be 210 to 263 feet in height and would have anemometers mounted at varying distances above the ground. Information collected from the anemometers would be relayed to the O&M building via the Proposed Projects communication system. The towers would be constructed of either a lattice frame or tubular steel structure and would be made perch-proof to raptors and other large birds.

Operations and Maintenance (O&M) Facility

The O&M facility would be sited at the south access road east of SH-77 near the Conner Creek Summit. The O&M facility would include a main building with offices, spare parts storage, a domestic well, restrooms, a septic system, a shop area, outdoor parking facilities, a turn-around area for larger vehicles, outdoor lighting and a gated access with partial or full perimeter fencing. The O&M building would have a foundation footprint of about 50 by 100 feet. The projected permanent footprint of the O&M facility (including parking area) would be about two acres. The building would be painted to match the surrounding landscape color and would be landscaped with native species of grasses and shrubs matching those found on-site prior to construction.

2.3.2 Construction

The Proposed Project would use standard construction and operation procedures used for other wind power projects in the western United States. These procedures, with minor modification to allow for site-specific circumstances and differences between turbine manufacturers, are summarized below. Additionally, project construction and operations will follow BLM Best Management Practices (BMP) as described in Appendices C and D. The construction of the project is projected to take approximately eight months.

Staging/Equipment Lay-Down Areas

To facilitate the construction of the Proposed Project, project staging areas would be needed. It is anticipated that a single project staging area would be located off-site near I-84 northeast of Cotterel Mountain. This staging area would be sited on private land that would be leased by the Applicant for the duration of the project construction. The staging area would be approximately five acres in size and would be used for the temporary storage of turbine components, construction equipment, and other supplies.

Five equipment lay-down areas would be required for construction of the Proposed Project. The lay-down areas would be used during construction for storage of equipment and facility construction materials, equipment parking and refueling sites, crane assembly and disassembly, a batch plant, waste disposal and collection receptacles, sanitary facilities, and temporary modular office space. The lay-down areas would range from two to five acres in size. The total area of ground disturbance for the five lay-down areas would be approximately 15 acres. In addition to the lay-down area on the project site, there may also be construction marshalling areas in the vicinity of Cotterel Mountain.

Road Construction

To obtain preliminary roadway footprints, profiles and sections were developed for the Proposed Project roads. From these preliminary profiles and sections, estimates of cut-and-fill required to construct the roads were calculated using InRoads® model. Five-foot contour data were used to develop a digital terrain model that represents the existing ground in the InRoads® model. A horizontal alignment was created and overlaid on the digital terrain model. This alignment met the requirements for the type and size of trucks that would be delivering and constructing the Proposed Project. The roadway alignment requires the following design features:

- The road is to be gravel, 16 feet wide, less than two percent crown or inslope with ditch and culverts as required on uphill side.
- Maximum grade is ten percent.
- Maximum allowable dip is six inches in 50 feet. Maximum allowable bump is six inches in 50 feet.
- On turns, the minimum inside radius is 82 feet. The minimum outside radius is 115 feet (so at the apex of a 180 degree turn the road is 33 feet wide).

A profile was then developed from the digital terrain model along the horizontal alignment, and a vertical alignment was developed along the profile that met the requirements. A typical section was developed, that met the requirements, and was placed every 20 feet along the horizontal and vertical alignment. Cut-and-fill lines were developed on the digital terrain model at the 20-foot interval and interpolated between the 20-foot placements.

The numbers generated for area, along with cut-and-fill volumes for the Proposed Project roadways are based on general assumptions and approximate locations of the Proposed Project features. These numbers are for analysis purposes only. Final location of the road and the cut-and-fill volumes would be based on topography and sound engineering principles. Figure 2.3-4 shows a diagram of the typical cross section of the 16-foot wide project access roads. Figure 2.3-5 shows a diagram of the typical cross section of the 35-foot wide turbine string roads.

The minimum full-surfaced width for project access roads would be 16 feet. The roadway along the ridgelines to access the turbine string would be 35 feet in width. There would be no shoulders. Cut-and-fill slopes would be at a ratio of 2:1. Equipment clearance would require a minimum inside radius of 82 feet on all turns, and would be graded to within no more than 6 inches of rise or drop in any 50-foot length. Turnouts to allow for safe passing of construction vehicles would be 64 feet wide and 450 feet in length.

No material quarries will be located on BLM or other federal lands. Any needed fill or road base material in excess of that generated from road cut activities would be obtained from a licensed off-site private source.

Topsoil removed during road construction would be stockpiled at project staging areas. The stockpiled topsoil would be respread on cut-and-fill slopes, and then re-vegetated as soon possible following road construction.

Construction traffic would be restricted to the roads developed for the project. Use of existing unimproved roads would be for emergency situations only. Flaggers with two-way radios would be used to control construction traffic and reduce the potential for accidents along all roads. Speed limits would be set commensurate with road type, traffic volume, vehicle type, and site-specific conditions as necessary to ensure safe and efficient traffic flow.

To avoid unnecessary impacts to vegetation, construction equipment would be limited to construction corridors and to designated staging/equipment lay-down area footprints. Where possible, the BLM Sensitive plant species *Pedio cactus* would be transplanted from road ROW and tower pad sites to areas outside of the project impact area, as approved by the BLM.

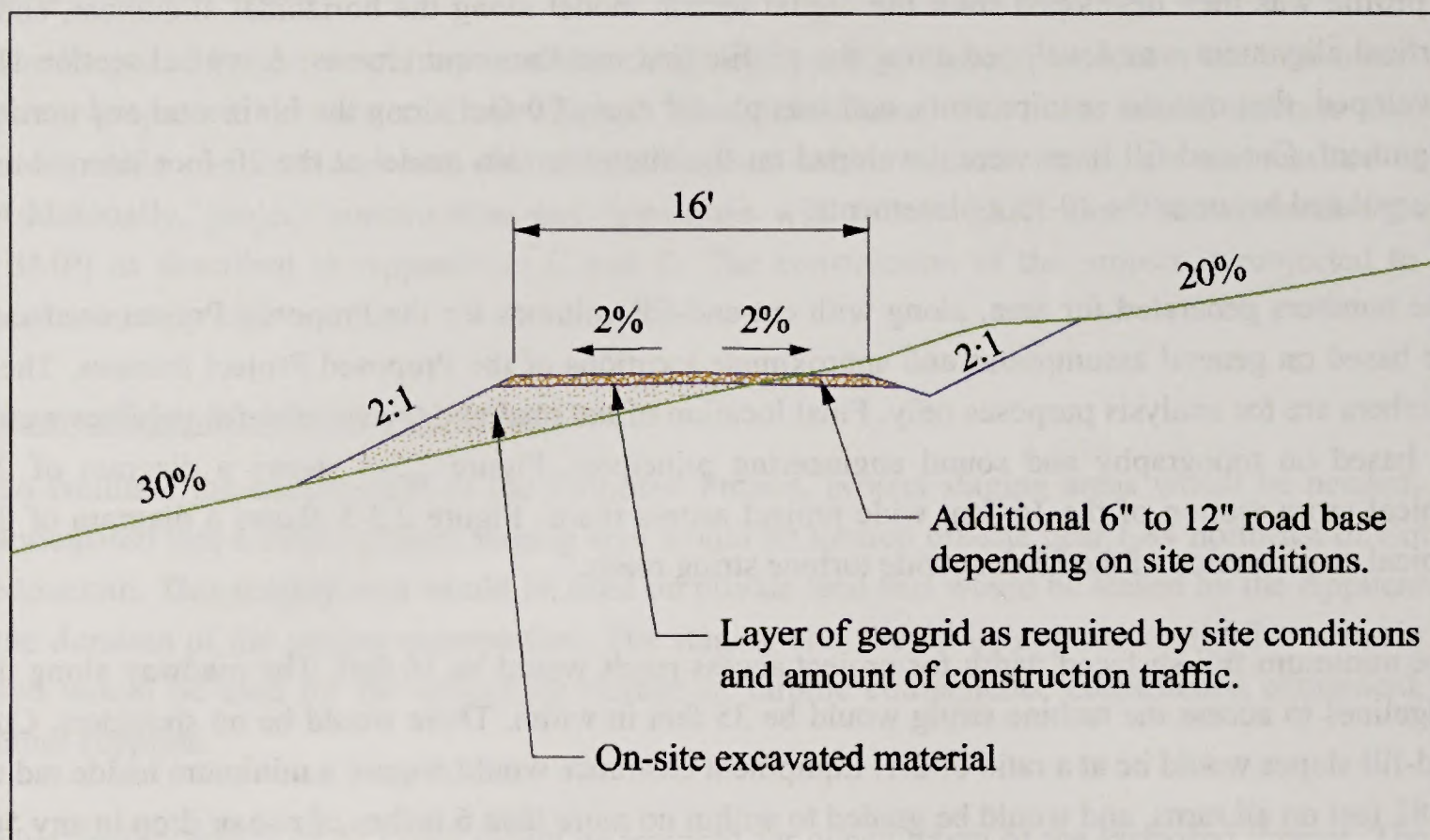


Figure 2.3-4. Typical Cross Section for Project Access Roads.

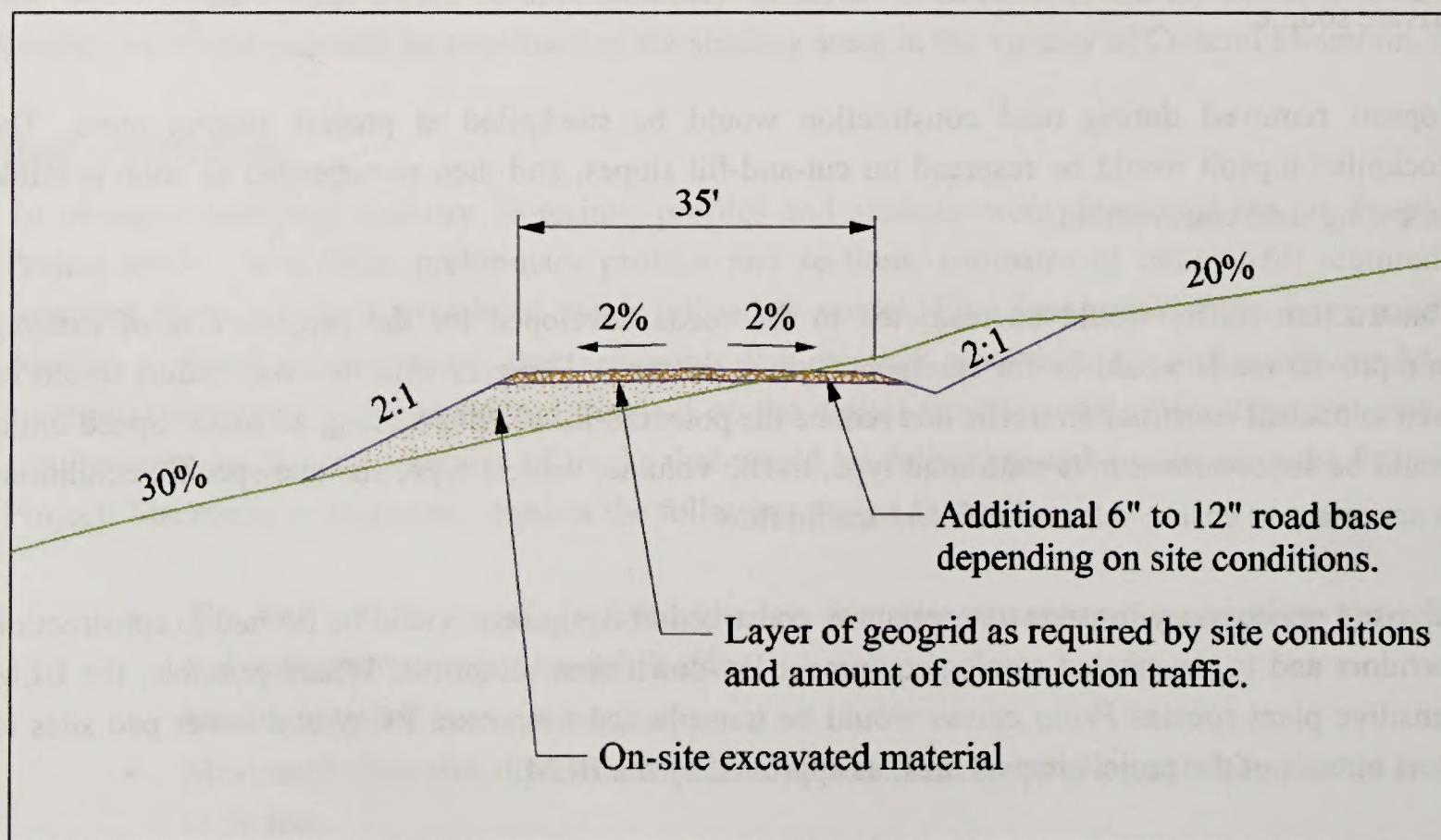


Figure 2.3-5. Typical Cross Section for Project Turbine String Roads.

To help limit the spread and establishment of an invasive species community within disturbed areas, prompt establishment of the desired vegetation would be required. Seeding would occur as soon as possible during the optimal period after construction using certified “weed-free” seed and using native species to the extent possible, in a mix prescribed by the BLM (Appendix C), on all areas to be seeded.

Turbine Pads and Foundations

At each turbine pad, a 185-foot by 180-foot lay down area would be required for off-loading and storage of the three tower sections, nacelle, rotor hub, and blades. In level or near level terrain, this lay down area would not need to be graded or cleared of vegetation. Construction access to this area would be limited to wheeled vehicles. Some crushing of vegetation and soil compaction would be expected to occur. Within this lay down area, a 90-foot diameter area would be cleared of vegetation and graded to facilitate construction of the turbine foundation (Figure 2.3-6).

To allow a large track-mounted crane to access the turbine foundations, a crane pad would be constructed adjacent to the turbine access road. The crane pad would be 40 feet in width and 120 feet in length. It would be constructed using standard cut-and-fill road construction procedures. To allow the crane to safely lift the large and extremely heavy turbine components, the crane pad must be nearly flat. Following construction, the majority of the crane pad would be recontoured and seeded. An eight-foot wide, 120-foot long gravel-surface turbine spur road would be left to allow maintenance vehicles access to the turbine.

The Proposed Project area has rhyolite or basalt rock formations within a few inches, but no more than two feet from the surface where the turbine foundations would be constructed. These rock formations are covered by a few inches to two feet of mineral soil. The quality of the rhyolite or basalt formations is sufficient to allow for the use of a rock socket type foundation (GeoEngineers 2004).

Rock socket foundations for turbines in the 1.5 to 3.0 megawatts (MW) range involve making a roughly circular excavation approximately 16 feet in diameter and 25 to 30 feet deep. Boreholes about three inches in diameter are drilled to a depth of two feet below the foundation depth (i.e., 27 to 32 feet deep). Packets of explosives about the size of soda cans (each containing about 2 pounds of explosive) are lowered into the boreholes (one packet per each foot of depth) and the remaining space is filled with sand. Rock within the excavation area is first fractured by delayed detonation blasting in interior and perimeter bore holes (Figure 2.3-7). The majority of the energy released by the detonation is consumed in fracturing rock within a conical zone a maximum of twice the depth of the foundation (i.e., 48 to 56 feet). The remaining energy is transferred away from the blast in ring waves as elastic vibration in the rock (no permanent deformation of the rock) and air vibration. Rock vibrations should dissipate within less than 200 feet from the foundation site. The fractured rock is subsequently removed from the excavation area (Figure 2.3-8). Blasting would not occur within 200 feet of the two concrete-block structures that house electronic communication equipment located at the summit of Cotterel Mountain. These structures would be evaluated by an engineer pre-blasting and post-blasting

to determine if any impact to these structures occurred. If impacts from blasting occur, these structures would be repaired or replaced by the Applicant.

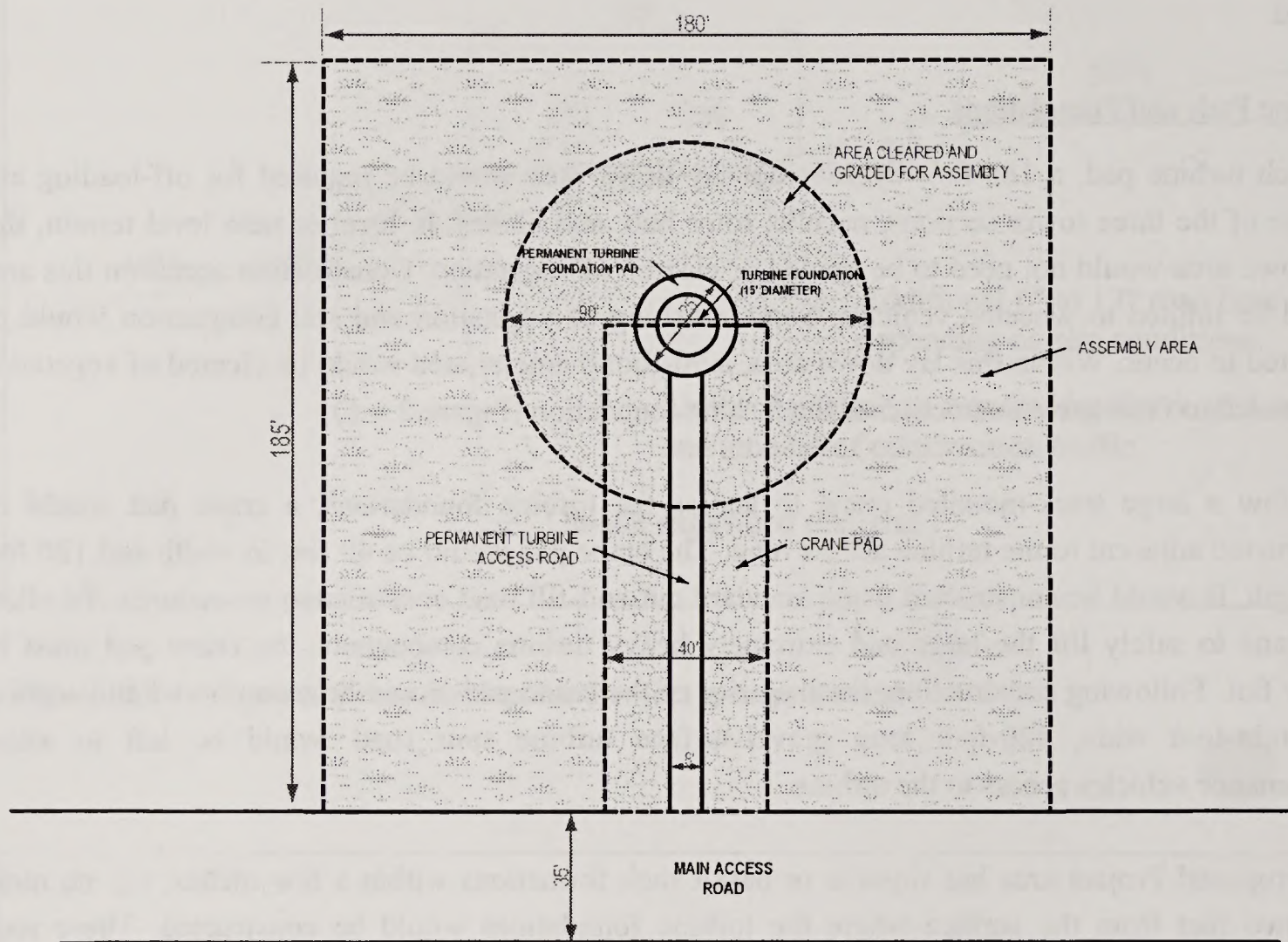
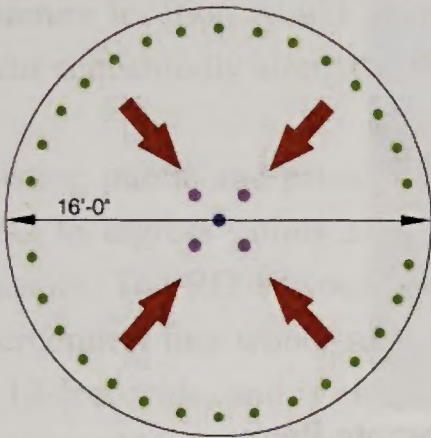


Figure 2.3-6. Typical Turbine Pad Lay-Down and Construction Area.

Two sections of concentric steel conduit forms are lowered into the excavation (Figure 2.3-9). Concrete slurry is pumped between the outside of the larger diameter conduit and the perimeter of the excavation. Spoils from the excavation are used to fill the inside of the smaller diameter conduit. A bolt structure is lowered into the area between the two conduits (Figure 2.3-10) and concreted into place (Figure 2.3-11). The wind turbine tower is connected to the protruding bolts.

To adequately ground the turbines to prevent damage from electrical storms, three-inch diameter 30-foot deep holes may be required for placement of turbine grounding rods as needed. These holes would be located adjacent to the turbine foundations within the 90-foot diameter area that is cleared for foundation construction. Following placement of the grounding rods, the holes would be backfilled and capped with concrete.

Three phase detonation sequence.
 Timed to crack center then fragment
 materials from perimeter to center.
 Produces a strong foundation socket.



- **1st Charge - Initial center charge**
Loosens area for 2nd charge
- **2nd Charge - Fracture center**
Creates an area of fractured rock in foundation center. Allows fragmented material to move to center of foundation socket.
- **3rd Charge - Perimeter cut**
A ring of 20-30 perimeter charges cuts evenly. Energy forces inward. The outer rock structure is intact. Voids in fractured rock produce mound in center.

Figure 2.3-7. Detonation Sequence for Tower Foundation Blasting.



Figure 2.3-8. Excavation of Tower Foundation Hole Following Blasting.



Figure 2.3-9. Two Steel Conduit Foundation Forms.



Figure 2.3-10. Bolt Structure for Tower Foundation.



Figure 2.3-11. Foundation Bolts Ready for Concrete Pour.

Tower Erection

Tower erection requires the use of one large track-mounted crane and two small cranes. The large crane would first raise the bottom conical steel tower section vertically, and then lower it over the threaded foundation bolts. The large crane would then raise each additional tower section to be bolted through the attached flanges to the lower tower section. The crane would then raise the nacelle, rotor, and blades to be installed atop the towers. Two smaller wheeled cranes would be used to off-load turbine components from trucks, and to assist in the precise alignment of tower sections.

Underground Communication and Electrical Cables

Trenching equipment would be used to excavate trenches in or near the access road bed to bury the insulated underground cables that would connect each turbine to one of the two project substations. Large conductor cables would be packed in sand within the trenches and covered to protect the cables from damage or possible contact. Optical fiber communication links would be placed in the same trenches as the conductor cables. The depth and number of trenches would be determined by the size of the cable required and the thermal conductivity of the soil or rock surrounding the trench.

Transmission Interconnect Line Construction

Transmission interconnect line construction would use standard industry procedures including: surveying; ROW preparation; materials hauling; structure assembly and erection; ground wire; conductor stringing; cleanup; and restoration. All transmission lines and structures would be designed to prevent the perching of raptors and other birds as outlined in "*Suggested Practices for Raptor Protection on Power Lines-The state of the Art in 1996*" (Olendorff *et al.* 1996). Construction procedures described below would be the same for both transmission line routes.

The overhead 138 kV transmission interconnect lines would be constructed on wooden H-frame structures. The wooden H-frame structure holes would be approximately three feet in diameter and ten feet deep. They would be auger drilled unless consolidated rock is encountered, then, structure holes would be advanced using dynamite. All blasting would be conducted by a permitted contractor,

and would be in compliance with state and federal regulations. Structures would be assembled on-site. Aboveground pole height would range from 60 to 65 feet. The disturbed surface area at each structure location would average 50 by 100 feet. Structure erection and conductor stringing would occur sequentially along the ROW.

Existing public and private roads would be used to transport materials and equipment from staging areas to ingress points along the transmission interconnect line ROW using the shortest distance possible. The ROW would be used to access transmission interconnect line construction sites. The interconnect line would require the installation of temporary access routes. The access routes would be 12-feet wide, and is cleared of large boulders to allow high clearance 4 X 4 vehicles to pass. The route would be installed to allow access to support the construction of the interconnect lines. Clearing of vegetation and minor grading may be necessary at some of the transmission interconnect line structures to facilitate their construction. Once construction is complete, the access routes would be used approximately twice a year for inspection and maintenance. Native vegetation would be allowed to re-establish over the routes to the extent that 4-wheel-drive vehicle travel remains practical. Barriers would be placed where the ROW intersects roads to prevent unauthorized traffic onto the transmission line ROW.

Batch Plant

The Proposed Project would require over 9,000 cubic yards of concrete for construction of the wind tower foundations and substations. Depending upon weather conditions, concrete typically needs to be poured within 90 minutes of its mixing with water. Delivery time to pour locations would likely exceed 90 minutes from existing concrete suppliers in the vicinity of the Proposed Project area or from potential off-site staging areas. Therefore, a temporary concrete batch plant would be constructed within the Proposed Project area to facilitate the sub-90 minute delivery time needed.

The concrete batch plant would be located on-site at a central location within an area approximately five acres in size. The batch plant would not be located within ¼ mile of any golden eagle nest, consistent with BMP for wildlife (Appendix D). Vegetation would be cleared and the ground leveled and a one-foot high earth berm or other appropriate erosion control devices, such as silt fences and straw bales, would be installed around the area to contain water runoff. Diversion ditches would be installed as necessary to prevent storm water from running onto the site from surrounding areas. The batch plant would operate during project construction hours for approximately four to five months of the eight month construction period. The batch plant would require a stand-alone generator approximately 250-kilowatt (kW) in size. The generator would draw fuel from an approximately 500-gallon aboveground storage tank with secondary storage for spill prevention. It is estimated that the batch plant would consume from 2,000 to 4,000 gallons of water per day. There would be a 4,000-gallon water tank on-site that would be replenished as needed. The batch plant operation would be permitted by the Idaho Department of Environmental Quality.

Stockpiles of sand and aggregate would be located at the batch plant in a manner that would minimize exposure to wind. Cement would be discharged via screw conveyor directly into an elevated storage

silo without outdoor storage. Construction managers and crew would use BMP along with good housekeeping practices to keep the plant, storage, and stockpiles clean, and to minimize the buildup of fine materials. Cement trucks would be cleaned and washed at the batch plant. Cement residue would be washed from the cement delivery trucks into an aboveground settling pond. Cement residue would be collected from the settling pond and trucked off-site for disposal, as needed.

Following completion of construction activities, the Applicant's contractor would rehabilitate the batch plant area. The area would be re-contoured, stockpiled topsoil would be replaced, and the area would be re-seeded with a designated mixture of native grasses, forbs, and shrubs as determined by the BLM.

Portable Rock Crusher

To construct the Proposed Project's roads, a rock crusher would be required to provide appropriately sized aggregate for fill and road base. The rock crusher would have an average capacity of approximately 20,000 tons per day. The crusher would operate during project construction hours for approximately four to five months of the eight-month construction period. In accordance with BMP, the rock crushing area would be sprayed by a water truck to suppress dust. The crusher contains several dust-suppression features including screens and water-spray. Dust-control measures would be operating at all emission points during operation, including start-up and shut-down periods, as required by the Idaho Department of Environmental Quality Air Quality permit.

During construction, water would be needed for dust control, for making concrete and equipment washing. No wells would be drilled or springs developed for the Proposed Project, however the O&M building may need to have a well drilled for domestic use only. All needed water would be transported from an off-site municipal or private source.

Trailer Pad

Contractors constructing the Proposed Project would require on-site mobile trailers to provide for management of and communication to the work force. The mobile trailers would also house a first aid station, emergency shelter, restrooms, and hand-tool storage area for the construction workforce. The trailer pad would be located at the southern end of the center turbine string. Vegetation would be cleared and the ground leveled over an area of about 200 by 500 feet. The ground surface would be graveled to limit dust and mud within the area.

Traffic

Construction of the Proposed Projects roads, facilities, transmission interconnect lines and electrical/communication lines would occur at about the same time, using individual vehicles for multiple tasks. During the construction period, there would be approximately 60 daily round trips by vehicles transporting construction personnel to the site. Over the entire construction period, there would be 2,205 trips of large trucks delivering the turbine components and related equipment to the project. In addition, there would be over 12,000 truck trips by dump trucks, concrete trucks, water

trucks, cranes, and other construction and trade vehicles (Table 2.3-1). Once constructed, O&M of the Proposed Project would require three round trips per day using pickups or other light-duty trucks.

A traffic management plan would be prepared for the construction of the project to ensure that no hazards would result from the increased truck traffic and so traffic flow would not be affected on local roads and highways. This plan would incorporate measures such as informational signs, flagmen when equipment may result in blocked throughways, traffic cones and flashing lights to identify any necessary changes in temporary land configuration.

Table 2.3-1. Estimated Vehicle Trips for Construction of the Proposed Project.

Turbine Component Types	Number of Components Required per Turbine	Number of Components per Truck Load	Number of Truck Loads per Turbine
Tower sections	3.0	1.0	3.0
Blades	3.0	2.0	1.5
Nacelle	1.0	1.0	1.0
Rotor hub	1.0	2.0	0.5
Foundation components	2.5	1.0	2.5
Foundation concrete (cubic yards)	70.0	10.0	7.0
Total truck loads/turbine			15.5
Purpose for truck load		Number of Truck Loads	
Deliver turbine components (assume 130 turbines)		2,205.0	
Road and turbine foundation construction		12,625.0	
Crane delivery and removal		40.0	
Deliver substation and other electrical components		50.0	
Deliver O&M building materials		20.0	
Total large truck loads		14,940.0	

Project Construction Clean Up

Final cleanup and restoration of the Proposed Project area would occur immediately following construction. Waste materials would be removed from the area and recycled or disposed of at approved facilities. All construction-related waste would be properly handled in accordance with state and federal regulations and permit requirements. The waste would be removed to a permitted disposal facility. This waste may include trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials.

Excess material (soil, rocks, vegetation) developed during the construction of the project would be disposed of at an off-site location. The off-site disposal area would be a private facility licensed to accept such material.

Construction Work Force

Approximately 107 to 132 workers per day would be required for construction of the Proposed Project. The beginning and end of the construction period would involve a slightly lower number of workers when compared to the middle months. The breakdown of the construction workforce by type is shown in Table 2.3-2. Construction of the Proposed Project would be completed over an approximate 8-month period.

Table 2.3-2. Estimated Workforce for the Proposed Project.

Type of Worker	Average Number Required Throughout the Construction Period
Carpenter/form setter	7
Cement finisher	3
Cement, rebar	4
Electrician helper	17
Electrician, industrial	11
Electrician, master	2
Laborer	43
Structural steel worker	9
Backhoe operator	5
Cherry picker operator	7
Cable crane operator	5
Dozer operator	2
Power shovel operator	3
Road roller operator	2
Estimated daily total	120

Twelve employees would work at the Proposed Project on a permanent basis, including one office administrator, one foreman, and ten windsmiths/electricians. Employees would work eight-hour shifts, five days per week, with the exception of five of the windsmiths, who would rotate shifts to cover nights and weekends. The Applicant anticipates that all permanent positions, with the exception of the foreman position, would be filled from qualified personnel from the local labor force. Windsmith training would be provided to those who have a basic understanding of electrical work.

The Applicant would contract with a county or state-approved local sanitation company to provide and maintain appropriate sanitation facilities. During construction, the sanitation facilities would be located at each of the crane assembly areas, the batch plant, the substations, and the trailer pad area, and when necessary additional facilities would be placed at specific construction locations.

2.3.3 Public Access and Safety

Public access to the federal and state lands would not be restricted. However, during construction of specific project features (blasting, tower erection, transmission interconnect line stringing) certain portions of the Proposed Project area would be restricted to the public for safety purposes. Authorized users such as grazing permittees and communication site personnel would continue to have access during the construction period. Following project construction, public access to federal and state lands would be allowed to resume. The substation(s) would be fenced with 12-foot high chain-link fence to prevent public and wildlife access to high voltage equipment. Safety signs would be posted in conformance with applicable state and federal regulations around all towers (where necessary), the substation(s) and on the transformer(s), and other high voltage facilities and along roads. Any existing livestock control fences that would need to be replaced or repaired would conform to BLM Manual Handbook H-1741-1 for the passage of wildlife.

In an effort to prevent damage to livestock and for safety considerations for the construction crews, specific portions of the Proposed Project area may be closed to livestock grazing. If these closures would be necessary, the permittees would be compensated by the Applicant for any costs associated with moving, feeding, or caring for displaced livestock during the construction period for the Proposed Project. In Addition, the Dale Pierce Allotment may be made available to permittees for livestock displaced from Cotterel Mountain during construction of the Proposed Project.

Federal Aviation Administration (FAA) regulations require lighting on structures over 200 feet in height. The turbines proposed under all the action alternatives would be over 210 feet in height and therefore would require appropriate obstruction lighting. However, the FAA may determine that the absence of marking and/or lighting does not threaten aviation. Recommendations on marking and lighting structures vary depending on: terrain; local weather patterns; geographic location, and, in the case of wind farms, the cumulative number of towers and overall site layout. The FAA would review the Proposed Project prior to construction and might recommend that tower markings or aviation safety lighting be installed on all or only a portion of the turbine towers.

Although coordination with the FAA has not yet been initiated, based on the lighting and marking requirements of similar projects and the FAA Obstruction Marking and Lighting Advisory Circular (AC70/7460-1K), a likely adequate lighting setup for the Proposed Project can be determined. It is anticipated that the probable lighting setup would consist of two medium-intensity, flashing white lights operating during the day and twilight, and two flashing red beacons operating during the night. The intensity of the lights would be based on a level of ambient light, with illumination below two foot-candles being normal for the night and illumination of above five foot-candles being the standard for the day. It is anticipated the lights would not be mounted on every turbine. Most likely they would be located on several strategically selected turbines to adequately mark the extent of the facility. The minimum number of required lights would be used in order to minimize attractants for birds during night migrations.

2.3.4 Operations and Maintenance (O&M)

Routine maintenance of the turbines would be necessary to maximize performance and detect potential difficulties. Routine activities would consist primarily of daily travel by windsmiths that would test and maintain the wind facilities. O&M staff would travel in pickup or other light-duty trucks. Most servicing and repair would be performed within the nacelle, without using a crane to remove the turbine from the tower. Occasionally, the use of a crane or equipment transport vehicles may be necessary for cleaning, repairing, adjusting, or replacing the rotors or other components of the turbine. Cranes used for maintenance activities are not as large as the large track-mounted cranes needed to erect the turbine towers. Occasional use of a construction size crane may be required.

Monitoring the operations of the Proposed Project would be conducted from computers located in the base of each turbine tower and from the O&M building using telecommunication links and computer-based monitoring.

Over time, it would be necessary to clean or repaint the blades and towers, and periodically exchange lubricants and hydraulic fluids in the mechanisms of the turbines. All lubricants and hydraulic fluids would be stored, used, and disposed of in accordance with applicable laws and regulations. Any necessary repainting would be performed by licensed contractors in compliance with applicable laws and regulations.

The gearbox would be sealed to prevent lubricant leakage. The gearbox lubricant would be sampled periodically and tested to confirm that it retains adequate lubricating properties. When the lubricants have degraded to the point where they no longer contain the needed lubricating properties, the gearbox would be drained and new lubricant would be added.

Transformers contain oil for heat dissipation. The transformers are sealed and contain no moving parts. The transformer oil would be subject to periodic inspection and does not need replacement.

Construction equipment and O&M vehicles would be properly maintained at all times to minimize leaks of motor oils, hydraulic fluids, and fuels. During construction, refueling and maintaining vehicles that are authorized for highway travel would be performed off-site at an appropriate facility. Construction vehicles that are not highway-authorized would be serviced on the project site by a maintenance crew using a specially designed vehicle maintenance truck. During operation, O&M vehicles would be serviced and fueled at the O&M building or at an off-site location. A Spill Prevention, Containment and Countermeasure Plan would be prepared for the Proposed Project and would contain information regarding training, equipment inspection and maintenance, and refueling for construction vehicles, with an emphasis on preventing spills.

Hazardous Materials

Hazardous materials are those chemicals listed in the Environmental Protection Agency Consolidated List of Chemicals Subject to Reporting under Title III of the Superfund Amendments and Reauthorization Act of 1986. No hazardous or extremely hazardous materials (as defined by 40 CFR;

Section 355) are anticipated to be produced, used, stored, transported, or disposed of as a result of this project.

2.3.5 Reclamation

Reclamation refers to the restoration of lands used temporarily during a construction activity (such as staging areas) to their approximate condition prior to construction. After construction is complete, temporary work areas, trenches, and tower pads would be graded to the approximate original contour, and the area would be re-vegetated with a BLM-approved mixture of native grass, forbs, and shrub species. Reclamation would include implementation of all applicable BLM BMP (Appendix C).

2.3.6 Decommissioning

Decommissioning refers to the dismantling of the project elements and re-vegetating of the site upon completion of the operating life of the facility. While the ROW grant would have a 30-year term, it could be renewed indefinitely. Thus, the anticipated life of the wind plant would be greater than 30 years. Upgrading and replacing equipment can extend the operating life indefinitely, assuming that there would be future demand (after the 30-year term) for the electricity generated by the Proposed Project. Therefore, the estimated life of the project depends primarily on the demand for power, which would be expected to increase for the foreseeable future.

At the end of the useful life of the project, the Applicant would obtain any necessary authorization from the BLM and other appropriate regulatory agencies to decommission the project facilities. Decommissioning would involve removing the turbines, support towers, transformers, substations, and the upper portion of foundations. Generally, wind turbines, electrical components, and towers are either refurbished and resold, or recycled for scrap. All unsalvageable materials would be disposed of at authorized sites in accordance with laws and regulations.

Site reclamation after decommissioning would be based on site-specific requirements and techniques commonly employed at the time the area would be reclaimed. Techniques could include re-grading, spot replacement of topsoil, and revegetation of all disturbed areas with an approved native seed mix. Turbine towers and sub-station foundations would be removed to a depth of six inches below grade. Assuming that the transmission line would not be used for other potential developments, all structures, conductors, and cables would be removed. Abandoned roads would be reclaimed or left in place based on the preference of the BLM at the time of decommissioning. The ROW would then be terminated.

2.3.7 Project Design and Best Management Practices (BMP)

All action alternatives would be subject to BMP (Appendix C). The BMP in Appendix C represent standards from the BLM ROW Handbook (H2801-1). These BMP are designed to guide construction activities and development of facilities to minimize environmental and operational impacts. These include, but are not limited to, standards associated with overall project management, surface disturbance, facilities design, erosion control and revegetation, hazardous materials, project

monitoring and responsibilities for environmental inspection. In addition, BMPs specific to wildlife includes fatality monitoring, and a ¼-mile golden eagle nest buffer zone would be required (Appendix D).

An example of these BMP would be standards related to noxious weed control. Based on these standards, the Applicant would be responsible for the control of noxious weeds caused by the activities authorized by the ROW (Appendix C). The Applicant would be required to meet BLM standards in the application of weed control. The Applicant would use integrated noxious weed control management techniques to control the establishment of weeds. Methods of control would include herbicidal, manual, mechanical and biological methods. The actual control method would be based on access, time of year, type of weed species, growth stage of the weed species, wind velocity, affected acreage, etc. All applicable personal protective equipment and clothing would be used in noxious weed control work. All weed control work would be completed in consultation with the Burley BLM noxious weed control specialist and the Cassia County Weed Supervisor.

All noxious weed control efforts would be in accordance with annual NEPA compliance documents, which documents sensitive species and their locations, provides site-specific herbicidal usage rates, and includes plant and animal clearances. These NEPA documents would identify newly established noxious weed species and provide control practices from year to year. It is estimated that actual weed control efforts would not exceed 50 acres per year, although weed control inventory and monitoring may include several thousand acres annually.

Fatality monitoring using methods and protocols that have been used at other operating wind project in the United States would be required for a period of five years commencing at project start up.

2.4 ALTERNATIVE B – PROPOSED ACTION

This alternative is presented as proposed in the ROW application made by the Applicant to the BLM. The Applicant has attempted to reduce potential project impacts through project design, application of BMP (Appendix C), and consideration of input from its own public scoping efforts in developing its proposed action. The BLM has not modified this alternative; it is the Applicant's proposed action.

Background: On March 23, 2001, Windland, Inc. filed a ROW application with the BLM pursuant to Title V of the *Federal Land Policy and Management Act of October 21, 1976* (43 U.S.C. 1761, as amended). The Applicant has petitioned the BLM to grant a ROW for the construction, operation, maintenance and removal of a wind-powered electric generation facility on Cotterel Mountain in Cassia County, Idaho. The application specified the proposed construction of between 210 and 226 Vestas (V-47) 660-kW wind turbines with a nameplate rating for the whole project of between 139 and 150 MW. These turbines require a 165-foot high tower and have a rotor diameter of 154 feet, with a total height to the tip of the blade at its highest point being 242 feet.

When the application was filed, the V-47 was considered a very reliable industry standard and the Applicant was confident that this would be their machine of choice. However, wind turbine

technology has changed, with several manufactures building larger machines with nameplate ratings of between 1.3 and 1.8 MW. The V-47 has been replaced by much larger, more efficient turbines; hence, the nature of the original application has changed. Because of the rapid rise in technology, the Applicant now includes an alternate proposal of constructing between 120 and 130 of the larger turbines, thereby, giving the Proposed Action a total generated output or nameplate rating of between 156 and 234 MW. These turbines would require towers between 212 and 262 feet in height and have blade diameters of between 213 and 231 feet, with a total height to the tip of the blade at their highest point being between 319 and 395 feet. Since these machines are so much larger, the spacing requirement between them is much greater, which reduces the number of wind towers.

Today, a commonly used machine in wind power projects is a 1.5 MW turbine. The Applicant's proposed action was modified to construct 130, 1.5 MW turbines with 210-foot tall towers, 230-foot diameter blades, and a total height to the tip of the blades at their highest point of 325 feet. This would be analyzed as Alternative B in this Final EIS. The Applicant's proposal to use the Vestas V-47 is outdated and is mentioned here purely for informational purposes.

Description of Alternative B: Under Alternative B, the Applicant is proposing to construct a wind-powered electric generation facility along the approximately 16-mile ridgeline of Cotterel Mountain. As proposed, the project would consist of approximately 130, 1.5 MW wind turbines that would be sited along the west, central, and east ridges of Cotterel Mountain (Figure 2.4-1). The west string would be 0.8-miles in length and located along the short side-ridge west of the main Cotterel Mountain ridgeline. The center string of wind turbines would be about 10.9 miles in length and placed along the spine of the central ridgeline of the mountain. The east string of wind turbines would be 4.1 miles in length and located along the east ridgeline that extends south of the Cotterel Mountain summit. In addition to the 130 wind turbines, two 138 kV overhead transmission interconnect lines would connect the project to the transmission grid emanating from two separate substations. The exact location of proposed wind turbines, roads, power lines, or other facility-related construction would be sited based on environmental, engineering, meteorological, or permit requirements. Other physical components of the wind plant are described in Table 2.4-1.

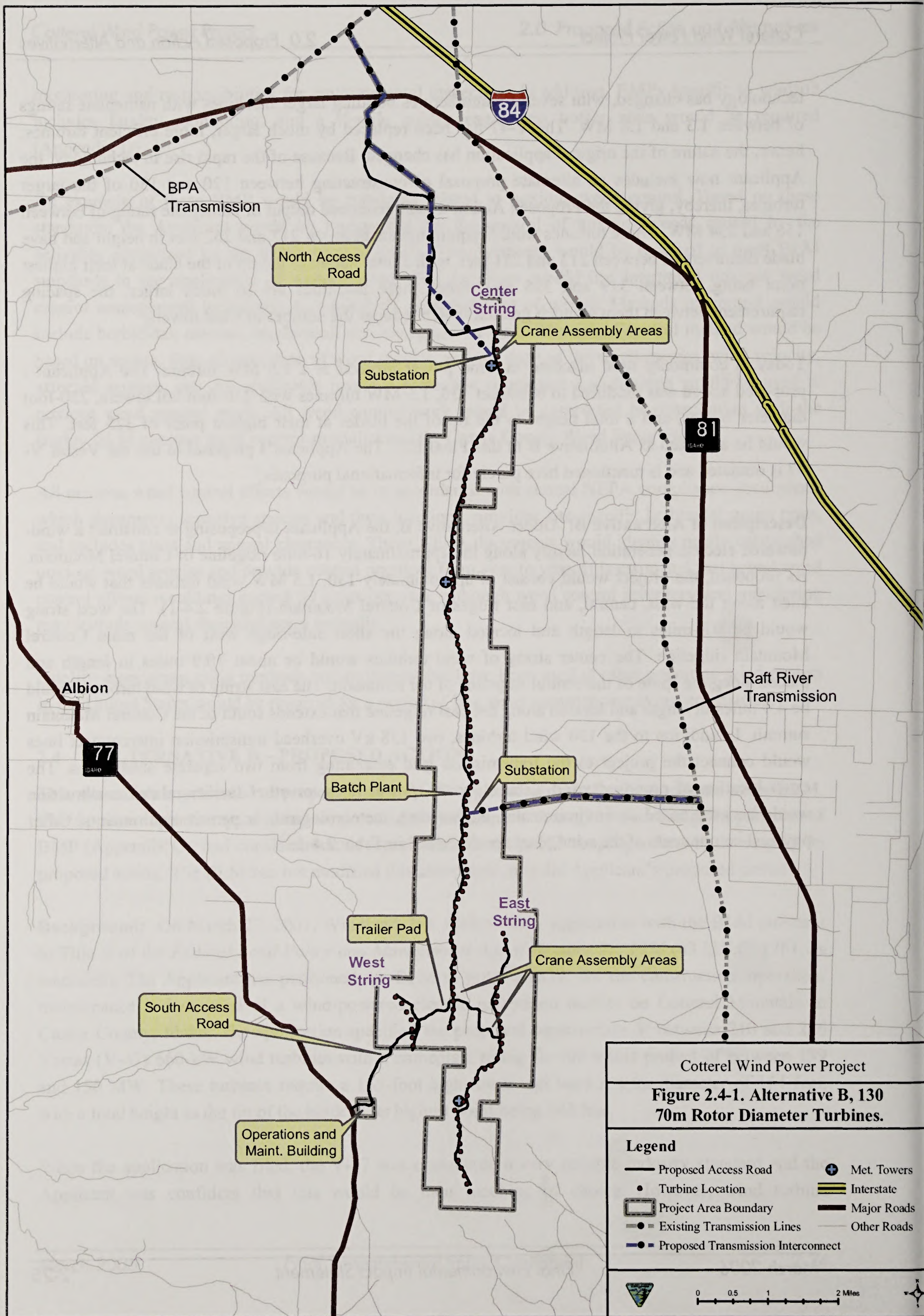


Table 2.4-1. Alternative B - Proposed Action Project Features.

Project production capacity (in MW)	195
Number of turbines	130
Turbine nameplate (each)	1.5 MW
Total length of turbine strings	15.8 miles
Project roads	26.6 miles (total)
Existing (to be used without modification)	0 miles
Reconstructed	4.5 miles
New	22.1 miles
Buried electrical distribution lines total	23 miles
Buried electrical distribution lines outside of roadbeds	5 miles
Number meteorological stations	3
Number of substations	2
Number of O&M facilities	1
Overhead transmission interconnect lines	9 miles
Temporary transmission interconnect line access routes	9 miles

2.4.1 General Features of the Wind Power Project Under Alternative B

Wind Turbines

Under Alternative B, each turbine would be 210 feet in height to the center of the hub. Each of the three blades would be 115 feet in length, with an overall diameter of 230 feet. Maximum blade height would be 325 feet above the surrounding landscape (Figure 2.3-1).

Substations

Under Alternative B, there would be two substations. The substations would be located at the north and central portions of the middle turbine string (Figure 2.4-1).

Transmission Interconnect Lines

The substations would connect to the existing Bonneville Power Administration (BPA) and Raft River 138 kV transmission lines via two newly constructed transmission interconnect lines. The two overhead 138 kV transmission interconnect lines would both be constructed on wooden H-frame structures (Figure 2.3-3). The transmission interconnect line ROW would cross lands managed by BLM, the State of Idaho, as well as those under private ownership (Table 2.4-2).

Table 2.4-2. Miles of Transmission Interconnect Line by Ownership for Alternative B.

Management or Ownership	Miles of Transmission Interconnect Line
	Alternative B
BLM	5.7
State of Idaho	2.2
Private	1.1
Total	9

The 138 kV transmission interconnect line that connects to the existing BPA line would be 5.7 miles in length. The transmission interconnect line that connects to the existing Raft River Line would be 3.3 miles in length. The transmission interconnect lines would be supported by wooden H-frame structures placed at approximately 800-ft intervals along the ROW. The transmission interconnect line connecting to the BPA line would require about 38 structures; the transmission line connecting to the Raft River line would require about 22 structures.

To construct the transmission interconnect lines approximately 9 miles of temporary transmission line access routes would be required. About 5.7 miles of the access routes would cross lands under BLM management. The remaining 3.3 miles would cross Idaho State Land and lands under private ownership. The access routes would be a 12-foot wide area, which is cleared of large boulders to allow high clearance vehicles to pass. The routes would be installed to allow access to support the construction of the interconnect lines. Clearing of vegetation and minor grading may be necessary at some of the transmission interconnect line structures to facilitate their construction. Once construction is complete, the access routes would be used approximately twice a year for inspection and maintenance of the interconnect line. Native vegetation would be allowed to re-establish over the trails to the extent that 4-wheel-drive vehicle travel remains practical. Barriers would be placed where the ROW intersects roads to prevent unauthorized traffic onto the transmission line ROW.

Roads

Under Alternative B, about 25 miles of all-weather gravel roads would be needed to access and maintain the Proposed Project. The existing Cotterel Mountain north and south access roads would be upgraded and improved for construction and operation of the Proposed Project. The existing road from SH-77 would require an upgrade and partial relocation to reduce maximum grade to ten percent or less, and to increase the inside radius of any turns on the road. This road would be used as primary access for construction crews and smaller materials. From the north end of Cotterel Mountain the existing road from SH-81 would be upgraded to an all-weather gravel road and would be the primary access route for all larger turbine components delivered to the Proposed Project area.

Under Alternative B, the Proposed Project would require about 4.5 miles of road reconstruction, and about 22 miles of new road construction. To allow safe passage of the large transport equipment used in construction, all-weather gravel roads would be built with adequate drainage and compaction to handle 15-ton per axle loads. Passing turnouts would be located every four miles along access roads.

Total estimated cut volume for road construction would be approximately 2,660,000 cubic yards. The estimated fill volume would be approximately 2,500,000 cubic yards. Under Alternative B, the total construction impact area for all project features would be about 365 acres. Following the reclamation of construction impact areas, the final Proposed Project would occupy an area of about 203 acres.

Operations and Maintenance Facility

Under Alternative B the O&M facility would be sited at the south access road east of SH-77 near the Conner Creek Summit. The O&M facility would include a main building with offices, spare parts storage, a domestic well, restrooms, a septic system, a shop area, outdoor parking facilities, a turn-

around area for larger vehicles, outdoor lighting and a gated access with partial or full perimeter fencing. The O&M building would have a foundation footprint of about 50 by 100 feet. The projected permanent footprint of the O&M facility (including parking area) would be about two acres. The building would be painted to match the surrounding landscape color and would be landscaped with native species of grasses and shrubs matching those found on-site prior to construction.

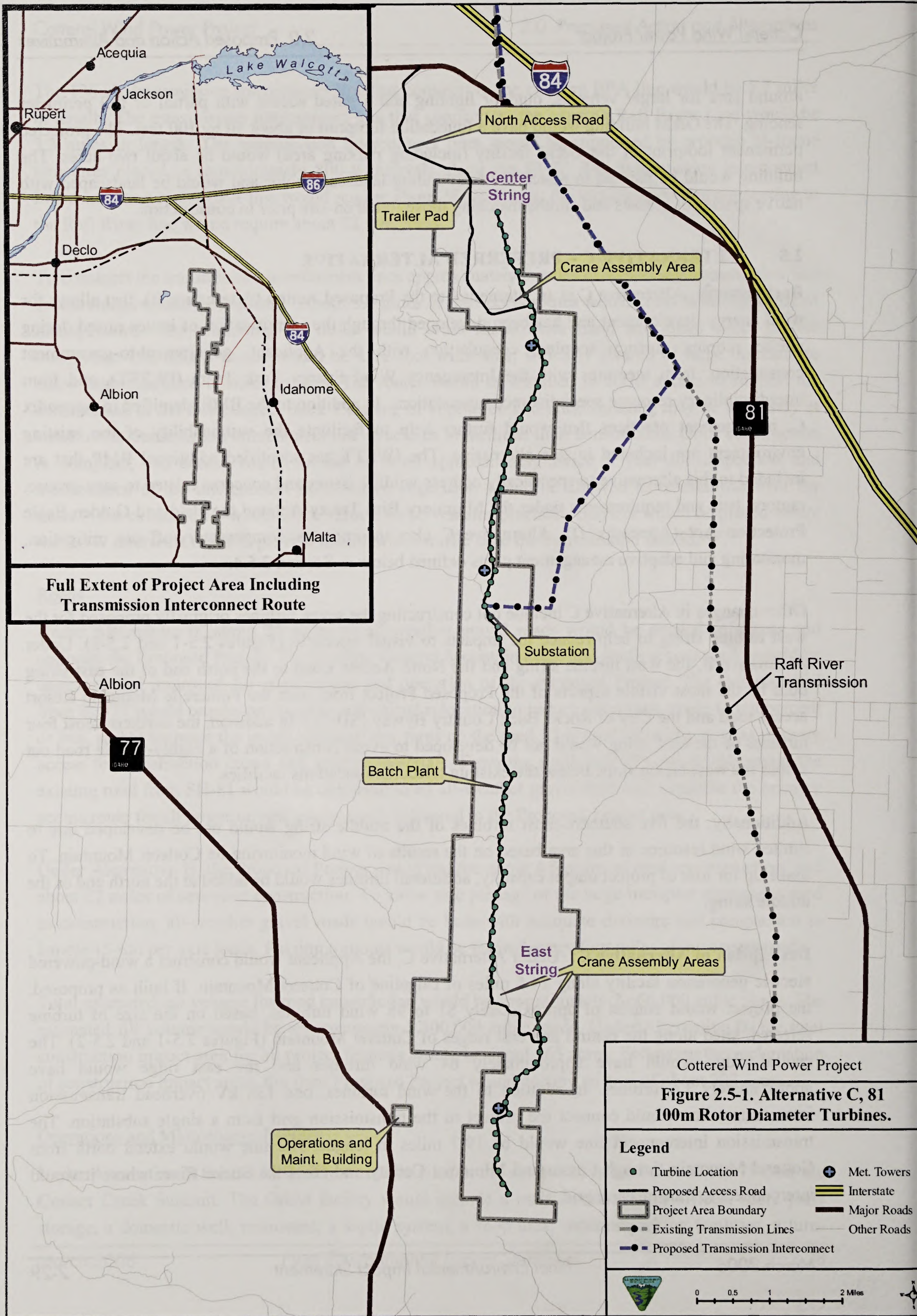
2.5 ALTERNATIVE C – PREFERRED ALTERNATIVE

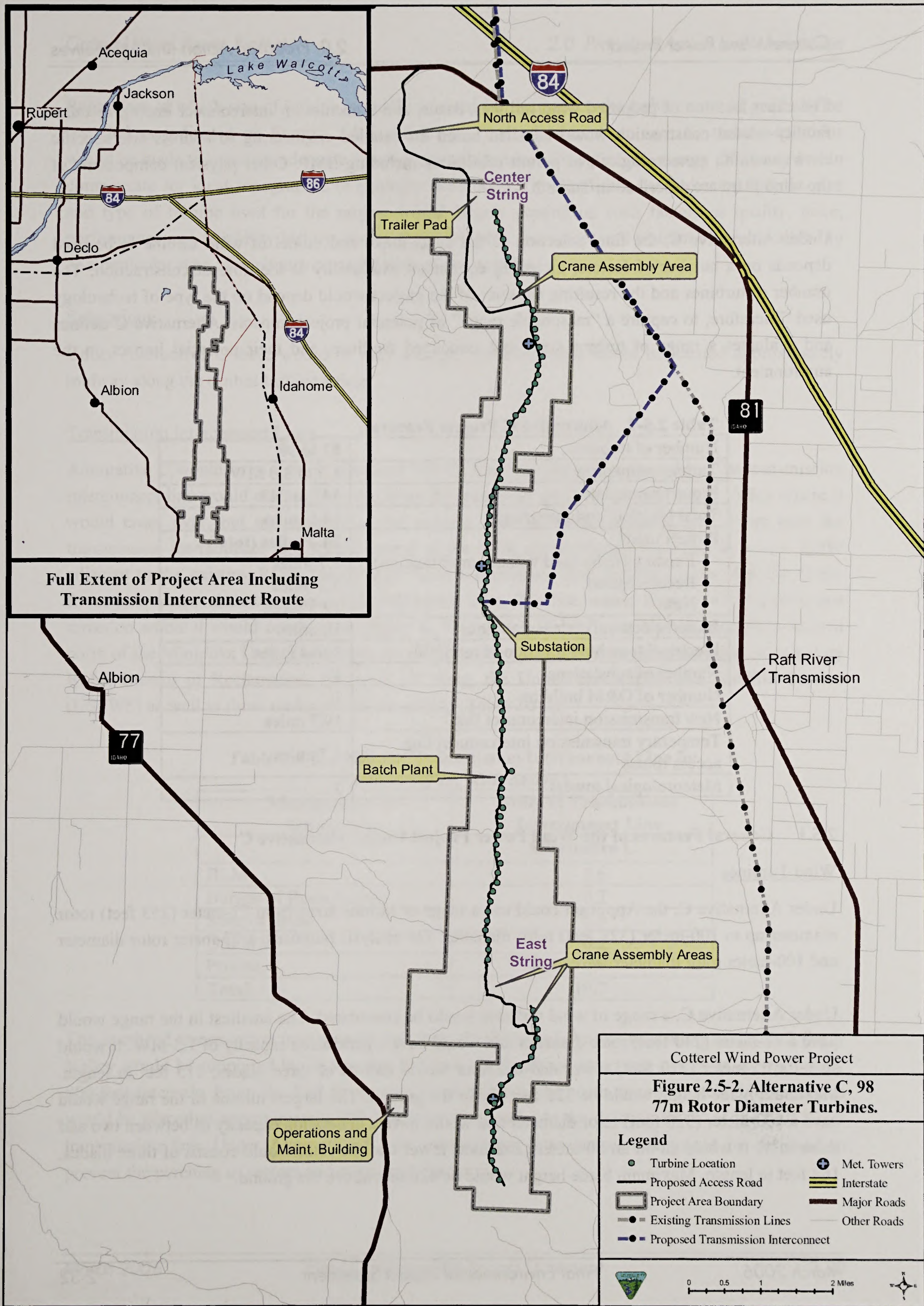
Background: Alternative C is an alternative to the Proposed Action (Alternative B), that allows for wind energy development and has been developed through the identification of issues raised during public scoping, agency scoping, consultation with the Applicant, government-to-government consultation, from meetings with the Interagency Wind Energy Task Team (IWETT), and from interdisciplinary resource specialist recommendations. In addition to the BMP identified in Appendix C, management practices that would further help to facilitate the sustainability of the existing environment are included in this alternative. The IWETT has identified additional BMP that are included in this alternative to specifically address wildlife issues and concerns related to sage-grouse, raptors, bats and requirements under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act (Appendix D). Alternative C also incorporates compensatory/off-site mitigation, monitoring and adaptive management plans defined below in Section 2.5.4.

Other changes in Alternative C include not constructing the seven turbines originally proposed for the west turbine string to help reduce the impacts to visual resources (Figures 2.5-1 and 2.5-2). Under Alternative B, the west turbine string and the North Access Road to the north end of the east string would be the most visible aspects of the Proposed Project from both the Pomerelle Mountain Resort access road and the City of Rocks Back Country Byway (SH-77). In addition, the northern-most four turbines of the east string would not be developed to avoid construction of a highly-visible road cut across the west facing slope below the existing telecommunications facilities.

Additionally, the five southern-most turbines of the middle string would not be developed due to limited wind resource in this area based on the results of wind monitoring on Cotterel Mountain. To make up for loss of project output capacity, additional turbines would be added at the north end of the middle string.

Description of Alternative C: Under Alternative C, the Applicant would construct a wind-powered electric generation facility along 14.5 miles of ridgeline of Cotterel Mountain. If built as proposed, the project would consist of approximately 81 to 98 wind turbines, based on the size of turbine selected, sited along the central and east ridges of Cotterel Mountain (Figures 2.5-1 and 2.5-2). The central ridge would have approximately 64 wind turbines and the east ridge would have approximately 17 turbines. In addition to the wind turbines, one 138 kV overhead transmission interconnect line would connect the project to the transmission grid from a single substation. The transmission interconnect line would be 19.7 miles in length. The line would extend north from Cotterel Mountain through Cassia and Minidoka County and cross the Snake River where it would interconnect to transmission grid.





Cotterel Wind Power Project
**Figure 2.5-2. Alternative C, 98
77m Rotor Diameter Turbines.**

The exact location of proposed wind turbines, roads, and transmission interconnect line(s), or other facility-related construction would be sited based on detailed engineering to address site specific environmental, meteorological, or permit conditions including BMP. Other physical components of the wind plant are described in Table 2.5-1.

Under Alternative C, the final selection of the exact make and model of wind turbine to be used depends on a number of factors, including equipment availability at the time of construction. The number of turbines and the resulting capacity of the project would depend on the type of technology used. Therefore, to capture a “reasonable range” of potential project impacts, Alternative C defines and evaluates a range of turbine sizes and associated facilities, and their potential impact on the environment.

Table 2.5-1. Alternative C Project Features.

Number of turbines	81 to 98
Turbine nameplate	1.5 to 3.0 MW
Project nameplate	147 to 243
Total length of turbine strings	14.5 miles
Project roads	24.4 miles (total)
Existing (to be used without modification)	1.7 miles
Reconstructed	3.2 miles
New	19.5 miles
Buried electrical distribution lines	18 miles
Electrical trenching (outside of road bed)	3 to 4 miles
Number of substations	1
Number of O&M building	1
New transmission interconnect line	19.7 miles
Temporary transmission interconnect line access routes	4.7 miles
Meteorological towers	3

2.5.1 General Features of the Wind Power Project Under Alternative C

Wind Turbines

Under Alternative C, the Applicant could use a range of turbine sizes from 77-meter (253 feet) rotor diameter up to 100-meter (328 feet) rotor diameter. For analysis purposes, a 77-meter rotor diameter and 100-meter rotor diameter were used.

Under Alternative C, a range of wind turbines would be considered. The smallest in the range would have a 77-meter (230 foot) rotor diameter and would have a generation capacity of 1.5 MW. It would sit on a 65-meter (210 foot) tower and the rotor would consist of three blades, 115 feet in length. Maximum blade height would be 325 feet above the ground. The largest turbine in the range would have a 100-meter (328 foot) rotor diameter and would have a generation capacity of between two and three MW. It would sit on an 80-meter (262 foot) tower and the rotor would consist of three blades, 164 feet in length. Maximum blade height would be 426 feet above the ground.

Regardless of which size of turbine is finally selected for the project, the turbines would generally be installed as indicated on Figures 2.5-1 and 2.5-2. Final adjustments to specific turbine locations would be made to maintain adequate spacing between turbines for optimized energy efficiency and to compensate for local topographic or geologic conditions. The Applicant has indicated that the size and type of turbine used for the project would largely depend on such factors as quality, price, performance and reliability history, power characteristics, guarantees and warranties, and availability of a particular type of wind turbine at the time of construction.

Substations

Under Alternative C there would be only a single substation that would be located approximately midway along the central turbine string.

Transmission Interconnect Lines

Alternative C would have a single overhead 138 kV transmission interconnect line. The transmission interconnect line would extend northeast from the substation down to the Raft River Valley where it would cross over, but not connect to the existing Raft River transmission line. From here the transmission interconnect line would extend to the north approximately 15 miles in a new ROW adjacent to the existing ROW for the Raft River transmission line. It would cross over the Snake River just west and downstream of the Minidoka Dam. The line would then travel in a northeast direction where it would connect the project to the existing Idaho Power transmission lines located north of the Minidoka Dam. The transmission interconnect line ROW would cross lands managed by BLM, Bureau of Reclamation, the State of Idaho, the United States Fish and Wildlife Service (USFWS) as well as those under private ownership (Table 2.5-2).

Table 2.5-2. Miles of Transmission Interconnect Line by Ownership for Alternative C.

Management or Ownership	Miles of Transmission Interconnect Line
	Alternative C
BLM	5.6
Bureau of Reclamation	0.7
State of Idaho	5.5
USFWS	0.2
Private	7.7
Total	19.7

The overhead transmission interconnect line from the Proposed Project substation to the Raft River Valley would be supported by 30 wooden H-frame, single circuit structures placed at approximately 800-foot intervals. From the Raft River transmission line to the north, approximately 110 structures would be placed at approximately 800-foot intervals parallel to the existing ROW of the Raft River transmission line. Under Alternative C, the transmission interconnect line would be designed to prevent the perching of raptors and other large birds.

To construct the transmission interconnect lines approximately 4.7 miles of temporary transmission line access routes would be required. About 1.2 miles of the access routes would cross lands under BLM management. The remaining 3.5 miles would cross lands under private ownership. The remaining portion of the transmission interconnect line parallels the existing Raft River Electric transmission line. Construction access for the Proposed Project's interconnect line would be provided from the existing ROW along the Raft River Electric transmission line.

Roads

Under Alternative C, only the existing north Cotterel Mountain access road would be reconstructed and relocated. The south access road would have only minor modifications made to improve safety including, ditch shaping, corner softening, improved sight distance. Under Alternative C, the Proposed Project would require the reconstruction of about 3.2 miles of road and the construction of about 19.5 miles of new roads. Total estimated cut volume for road construction would be approximately 2,200,000 cubic yards. The estimated fill volume would be approximately 2,425,000 cubic yards. Under Alternative C, the total construction impact area for all project features would be about 352 acres. Following the reclamation of construction impact areas, the final Proposed Project would occupy an area of about 205 acres.

Project Access

Under Alternative C, only the north access road off of SH-81 would be reconstructed. The south access road would have minor upgrades made to improve safety but would be mostly unchanged from existing conditions. Turbine components would only be delivered to the Proposed Project area from SH-81 along the north access road. The southern access would be available for ingress and egress from the Proposed Project area for all other construction vehicles.

Since turbine delivery under Alternative C would only occur from the north, trucks delivering turbine components would be required to turn around to travel back out the north access road. Truck turn-around areas would be 210 feet in diameter and would be centered on the access road. Truck turn-around areas would be located every four miles along the access road and would be interspersed with pullouts. Therefore, there would be either a truck turn-around or a pullout every two miles along the project roads.

Trailer Pads

Under Alternative C the trailer pad would be located at the north end of Cotterel Mountain. The south access road would not be a primary access. Therefore, the trailer pad would be located adjacent to the north access road to facilitate management and communication with construction vehicles and the construction work force entering and exiting the Proposed Project area.

Operations and maintenance Facility

The O&M facility would be the same as that described under Alternative B.

Meteorological Towers

The meteorological towers would be the same as those described under Alternative B.

2.5.2 Public Access

Under Alternative C, public access on the ridgeline would consist of a combination of new project roads and existing and newly constructed primitive roads (Figure 2.5-3). Although public use of new project roads along the ridgeline would be restricted through a series of gates, signage and natural rock barriers, there would not be a loss of public access to existing use areas. The public would still be able to access Cotterel Mountain by a combination of use of the existing primitive road (jeep trail) system, short sections of newly constructed primitive road, and use of specific sections of new project roads. This system of new project roads and jeep trails would allow existing uses of the area, including hunting, to continue.

2.5.3 Operations and Maintenance (O&M)

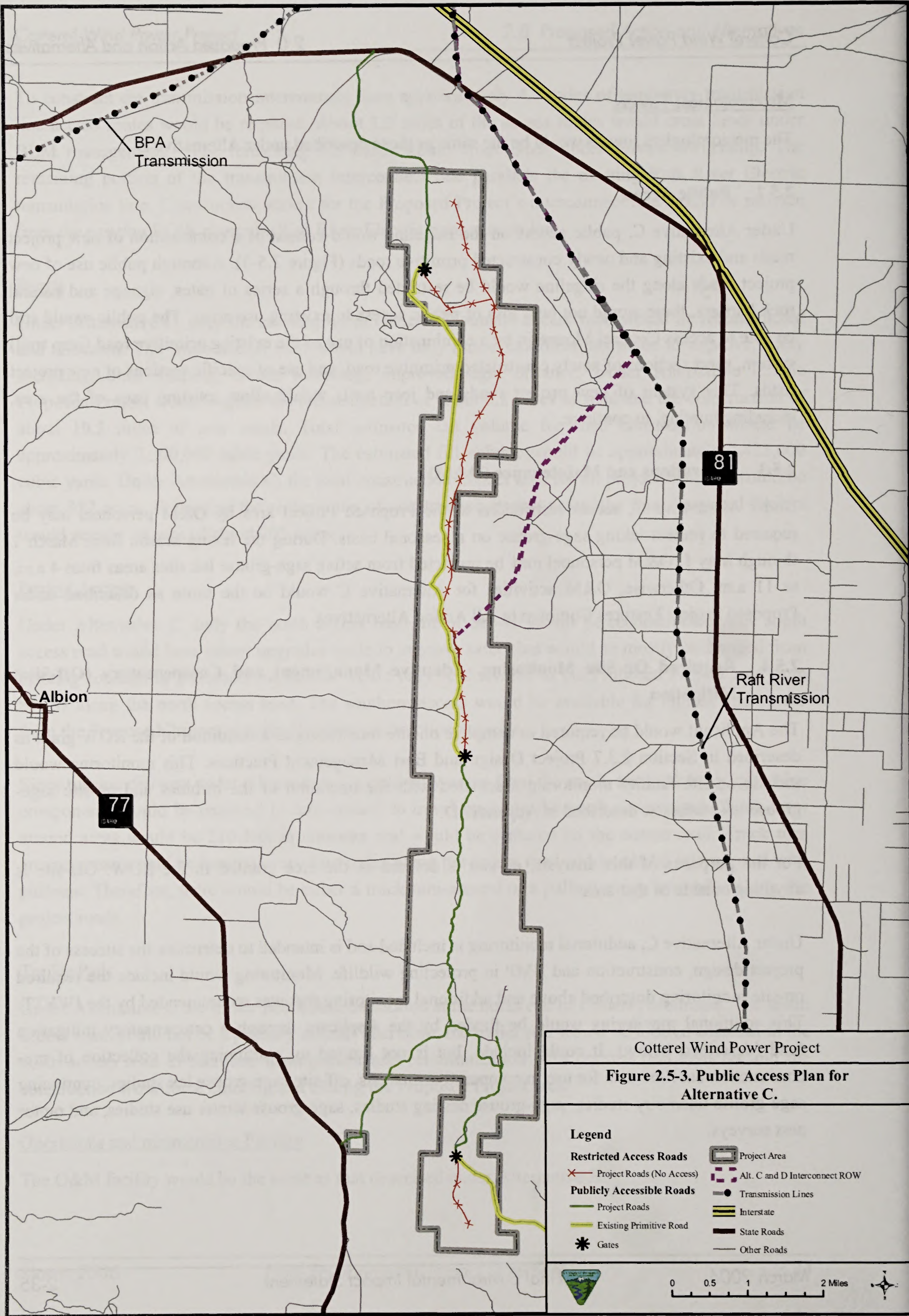
Under Alternative C, access restrictions to the Proposed Project area by O&M personnel may be required to protect leking sage-grouse on a seasonal basis. During the leking season from March 1 through May 1, O&M personnel may be restricted from active sage-grouse lek sites areas from 4 a.m. to 11 a.m. Otherwise, O&M activities for Alternative C would be the same as described under Proposed Project Features Common to All Action Alternatives.

2.5.4 Required On-Site Monitoring, Adaptive Management and Compensatory (Off-Site) Mitigation

The Applicant would be required to complete on-site monitoring as a condition of the ROW grant as described in Section 2.3.7 Project Design and Best Management Practices. This monitoring would include on-site fatality monitoring associated with the operation of the turbines and on-site sage-grouse lek studies as described in Appendix D.

For the purposes of this analysis, on-site is defined as the area granted in the ROW. Off-site is anything outside of that area.

Under Alternative C, additional monitoring is included and is intended to determine the success of the project design, construction and BMP in protecting wildlife. Monitoring would include the required on-site monitoring described above and additional monitoring that was recommended by the IWETT. This additional monitoring would be funded by the Applicant through a compensatory mitigation fund (described below). It could include, but is not limited to, continuing the collection of pre-construction baseline data for use in comparative analysis, off-site sage-grouse lek studies, continuing sage-grouse telemetry studies, sage-grouse nesting studies, sage-grouse winter use studies, and raptor nest surveys.



Wind power projects have effects on wildlife, particularly avian species and bats, depending upon the location, geography, and natural setting of the project. Monitoring of the project (5 years or greater) is key in understanding the relationship between the project design, siting of the towers, operation of the facility and effects on wildlife. These effects can occur in a variety of ways but based on data collected at other wind farms, are chiefly associated with bird collisions with the large blades that drive each of the wind turbines (referred to as the rotor swept area of each turbine). Additional long-term monitoring may also be necessary to determine how the characteristics of the project and its turbines affect the behavior and migration of birds and bats and to determine if there are certain turbines along the string that are contributing to bird and bat mortality that would trigger the need to implement management actions to reduce these effects.

On site monitoring of the Proposed Project would be funded by the Applicant for a period of five years. Monitoring would include avian fatality monitoring and sage-grouse lek surveys. Off-site monitoring will be coordinated by the BLM and recommended by the Technical Steering Committee. Monitoring on and off-site will receive ongoing review by the BLM and the Technical Steering Committee for needed modification and continuance through out the life the project.

Adaptive management is a relatively new tool designed to improve decisions regarding the planning, design, management and operation of large engineered projects in relationship to their setting. Adaptive management is a highly-valued management concept and iterative process that has been at the core of many inter-agency and intra-agency discussions specific to the development, design and operation of the Proposed Project.

The overall concept of adaptive management has been developed as a management tool over the past two decades through publication in the literature of scientific, engineering and management disciplines, and further refined through dialogue and discussion of the literature at professional meetings. The publications and discussion have included the literature of biological sciences, social sciences, management, manufacturing productivity, economics and engineering.

Adaptive management is based upon a concept of science that understands ecosystems are complex and inherently unpredictable over time. It approaches the uncertainties of ecosystem responses with attempts to structure management actions using a systematic method from which over time learning is a critical tool. Learning and adapting is based on a process of long-term monitoring of impacts to wildlife from this project. The Applicant and the BLM recognize that the findings of long-term monitoring could indicate the need for modification of operations and adaptive management. The BLM and the Applicant will work cooperatively with the USFWS and the Idaho Department of Fish and Game to develop appropriate actions or mitigation measures designed to address issues or concerns identified as a result of monitoring. Adaptive management tools that are available to the Applicant and BLM include, but are not limited to: timing stipulations during construction, operational changes of turbines, siting considerations, lighting scenarios, and color schemes.

The following is a synopsis of important characteristics of adaptive management identified by the Panel on Adaptive Management for Resource Stewardship, National Research Council, National Academy of Sciences, in its 2004 book, titled, *Adaptive Management for Water Resources Planning*. The Research Council's book consists of a review and analysis of the adaptive management literature of the past 20 years.

- *Management Objectives.* Management is an iterative process -- competing paradigms among cooperating scientists and differences among stakeholders are inherent and unavoidable.
- *Range of Management Choices.* Paradoxically, existing data rarely point to a single best management policy. There are many considerations that go into good management, including knowledge gained over time.
- *Learning.* A mechanism for capturing and incorporating learning into future decisions should be a part of the long-term process.
- *Collaboration.* A collaborative structure should exist to assist in advising and feeding back to project owners and federal managers.
- *Modeling.* Models are helpful and have limits. It is important that everyone understand model assumptions and limits so that model results are not equated with reality.
- *Monitoring.* Monitoring should precede the project, be a part of project design and continue after it is built.

How has Adaptive Management been applied to date to the development of the Proposed Project?

The Cotterel FEIS was preceded by three years of biological monitoring, several years of meteorological monitoring, engineering studies, inter-agency and intra-agency discussions of potential issues and impacts, review of the known scientific literature, review of the histories of other U.S. and foreign wind energy projects, consultation with manufacturers of wind turbines, and consultation with seasoned professionals from many disciplines, including engineering, biology, hydrology, and meteorology.

Discussion of adaptive management was a key subject of the meetings of the IWETT. The discussion of adaptive management and recommendations from IWETT team members resulted in changes and improvements in the FEIS. And, all of the foregoing was carefully considered and adapted into the final recommended project design.

The operation of the Proposed Project would be continuously monitored -- mechanically, electrically, meteorologically, and biologically. Over time information about the operations of the turbines and their relationships to their natural environments would become apparent. As information about the turbines and their relationships to the natural environment become available from monitoring over a

meaningful duration of time, then adaptive management can be used to address emerging problems. Here it is important to point out that, especially with regard to adaptive management, the terms 'wind farm', 'wind project', etc, can be misleading.

Each individual wind turbine is a separately controlled and monitored electrical generator. Each turbine occupies a unique air and ground space, or habitat, experiences unique wind and weather, and is exposed to the migrations and flights of different birds and bats at different times. On Cotterel Mountain, turbines are located as far as 15 miles, and as close as ¼ -mile, from one another.

Each turbine is capable of generating 1.5 to 3 MW of electricity. And each, depending on its location and the wind, would average from 35% to 40% of the output over the course of a year (its capacity factor). Depending on the model and manufacturer, each turbine would reach some 325 to 426 feet in height from the ground to the tip of the highest blade, and would have a blade, or rotor diameter of some 230 to 328 feet. In summary, each is an independent generating plant.

Operationally, it is possible that a few of the turbines might be idle in calm air while others are vigorously turning at windy locations along the 15 mile string of turbines. It is through our understanding of the individual behavior of each turbine, by monitoring them over time, that provides the opportunity for adaptive management.

At the large scale of the proposed project, there would be some level of impact on birds and bats, including fatalities. Adaptive management strategies are designed to recognize and respond to severe repetitive and recurring fatality incidents caused by individual turbines, if they occur, by analyzing long term monitoring data, in order to reduce them.

Adaptive management also would be used to monitor the site and respond to the needs of recreation users, hunters, livestock permittees, and of wildlife.

Adaptive management would be a central theme of the Proposed Project design, which is included in the Plan of Development. The Plan of Development and its BMP would be made a part of any future ROW grant holder.

The following are a few examples of how adaptive management would be applied on Cotterel Mountain for the Proposed Cotterel Wind Power Project:

- Adaptive management would be used to refine the final location of the project access and site roads in order to avoid sage-grouse leks and nesting sites, and other sensitive species. The initial design contains only a baseline from which to begin.
- Adaptive management would be used to microsite the final location of each turbine in order to avoid impacts on sage-grouse and golden eagles and their nesting sites. The initial design contains only conceptual baseline locations, not final locations.

- Adaptive management would be used to evaluate the results of long term fatality monitoring in order that the operator can make decisions at the direction of BLM, if necessary, regarding the operation of individual turbines during periods of intense migrations or other hazardous conditions. Although trigger points for operation adjustment could not be established at the initiation of the Proposed Project, analysis of monitoring data could be used over time to determine trends or significant events that would require modification of project operation.
- Adaptive management would be used to respond to the needs of local livestock permittees in order to assure that their livestock are not endangered by construction activities and they have constant access to food and water.
- Adaptive management would be used to respond to local recreational, hunting and other public uses of Cotterel Mountain to assure that multiple uses are continued.
- Adaptive management would be used to continuously monitor the safety of workers and the public during construction of the project with a goal of zero injuries or accidents.

The foregoing are but a few examples of the uses of adaptive management on Cotterel Mountain and the Proposed Project. Adaptive management has far more application than this short list.

Adaptive management is one of the newest tools to respond to changes and to improve decisions regarding management of large projects. In summary, adaptive management is, and would continue to be, an important dimension in the planning, development, design, operation and management of the Proposed Project.

BLM Washington Office Policy Guidance Instruction Memorandum No. 2005-069 states that off-site mitigation can be funded by voluntary contributions from the Applicant into a compensatory mitigation fund held by the BLM (Appendix E). This would be done by cooperative agreement between the Applicant and the BLM. This cooperative agreement would prescribe the level of contribution and the management and use of the fund. Accordingly, the Applicant has volunteered to contribute to a compensatory mitigation fund pursuant to the above-mentioned guidance. The Applicant has executed a letter of commitment to enter into a cooperative agreement (Appendix F). The Applicant intends the annual contribution to be in an amount equal to approximately one-half of one percent of the gross revenues received from Cotterel Wind Power Project electricity sales. For a 200 megawatt project on Cotterel Mountain, that contribution is expected to average approximately \$150,000 per year at today's forecasted production and electricity rates.

An extensive framework of off-site mitigation practices was also recommended by the IWETT to address impacts to wildlife, should they occur as a result of the Proposed Project. These practices would also be funded by the compensatory mitigation fund. The kinds of off-site mitigation practices recommended include, but are not limited to: purchase of key habitats; acquisition of conservation easements on key habitats; or, restoration, treatment or conversion of existing federally managed off-

site habitats. Any off-site activities proposed by the steering committee would have impacts associated, which would be separate from the impacts identified for this Proposed Project and analyzed in this document. They would be analyzed in separate NEPA documents on a case-by-case basis as needed.

It was further recommended by the IWETT that a technical steering committee would be formed to advise on the design of mitigation measures and monitoring covered by the compensatory mitigation fund. This committee would be responsible for recommending actions that would be funded by the compensatory mitigation fund (i.e. implementation of monitoring over and above that which is required, recommending commensurate off-site mitigation, and recommending adaptive management strategies). The intent is to ensure interagency involvement in mitigation and monitoring activities relating to migratory birds, bald and golden eagles and sage-grouse with particular emphasis on addressing the requirements of the Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act and sage-grouse conservation. The committee will also examine ongoing research and scientific studies attempting to understand the behavior and relationship between wildlife and wind energy developments. The technical steering committee would be an expansion of the IWETT and would consist of interagency wildlife and other resource professionals and the Applicant, with final decision authority resting with the BLM Field Office Manager. This committee would be formed and chartered prior to any construction of the Proposed Project.

The Technical Steering Committee may include but not be limited to: Wildlife Biologists, Ecologists, Resource Managers, Scientists and Engineers, representing BLM, the Applicant, IDF&G, USFWS, IDL, NRCS, BPA, Idaho Power, the Local Sage Grouse Working Group, Local Ranchers and Tribes. The Technical Steering Committee will be responsible for assisting BLM and the Applicant in several important scientific and technical areas including but are not limited to:

- Designing a long-term monitoring regime for post construction wind turbine operations.
- Evaluating impacts of the proposed project to wildlife, including sage grouse and raptors through scientific, statistically-sound analysis and interpretation of the long-term monitoring data.
- Determine the best use for funds provided under the voluntary compensatory mitigation.

Specific protocols for long-term monitoring would be contained in the Plan of Development (POD) for the proposed project. The protocols would outline a decision mechanisms for individual turbine operations in the event of severe fatality events during migrations, storms, or other unforeseen events. The protocols would also identify the conditions for advising the operator of the project to shut down an individual turbine, or turbines, in order to reduce fatalities of avian species.

2.6 ALTERNATIVE D

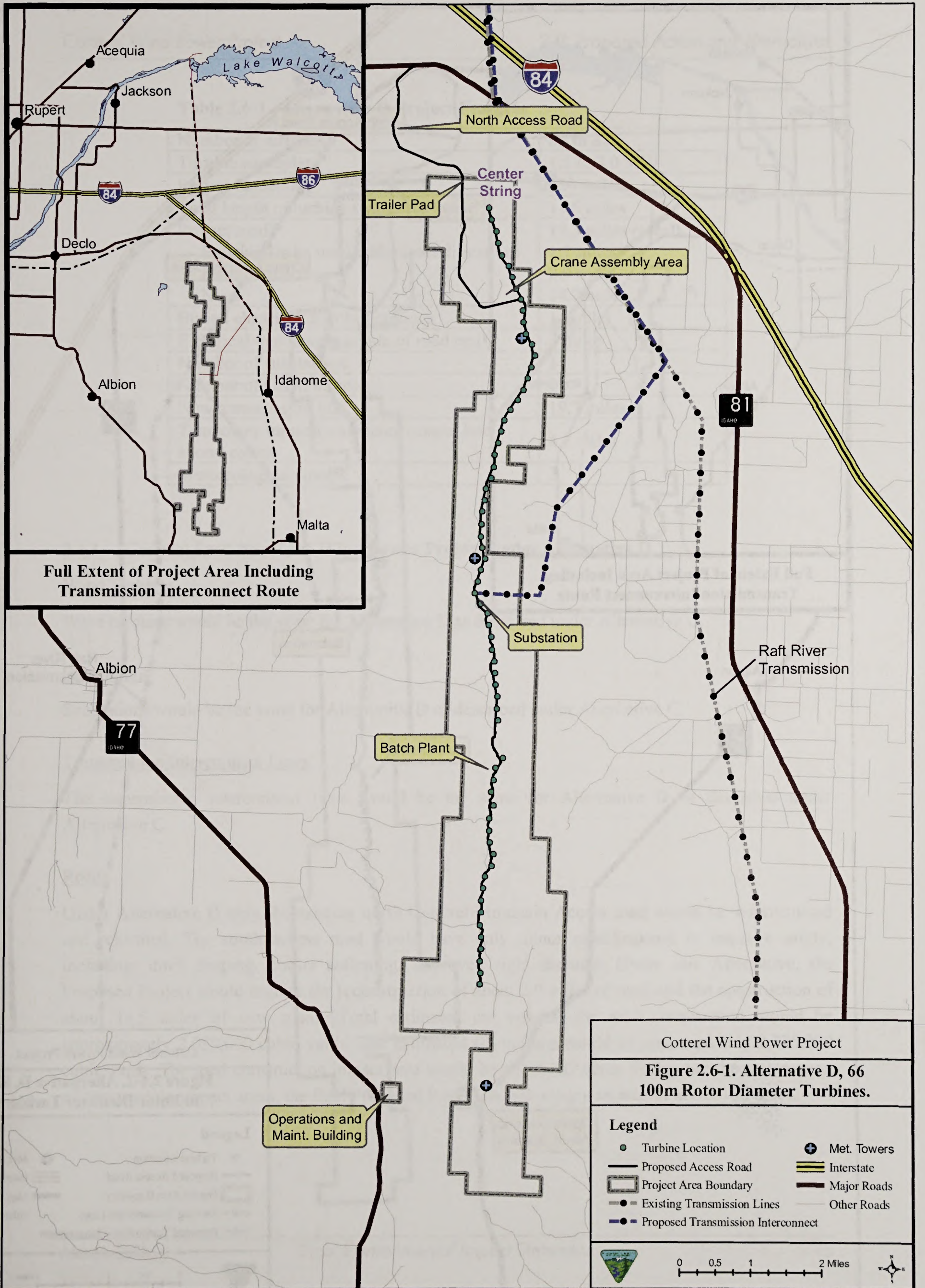
Background: Alternative D is an alternative to the Proposed Action (Alternative B), that allows for wind energy development and has been developed through the identification of issues raised during public scoping, agency scoping, consultation with the Applicant, the IWETT process, government-to-

government consultation, and from interdisciplinary resource specialist recommendations. In addition to the BMP identified in Appendix C, management practices that would further help to facilitate the sustainability of the existing environment are included under Alternative D. The IWETT has identified additional BMP that are included in this alternative to specifically address wildlife issues and concerns related to sage-grouse, raptors, bats and requirements under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act (Appendix D). Alternative D also incorporates compensatory/off-site mitigation, monitoring and adaptive management plans defined above in Section 2.5.4.

The premise of Alternative D is elimination of turbines from a portion of the sage-grouse habitat (leking, nesting, brood rearing, and winter range) while still maintaining an economically viable project. Because of the infrastructure costs involved with the project (i.e. turbines, roads, power lines, substation), the Applicant has determined that 66 turbines in the 1.5 MW or larger size range would be necessary for an economically viable project. Concentrating the turbines along the center ridge of Cotterel Mountain would be the best way to obtain this number of turbines while affecting the fewest resources. In addition, it would concentrate the project features on the central ridge, leaving the east ridge undeveloped.

Description of Alternative D: Alternative D would use the same size range and types of wind turbines as those proposed under Alternative C. Under Alternative D, a range of 66 to 82 turbines would range in generation capacity from 1.5 to 3.0 MW (Figure 2.6-1 and Figure 2.6-2). Tower height for the turbines would range from 210 feet to 262 feet, with maximum blade height ranging from 325 to 426 feet above the surrounding landscape. Rotor diameters would range from 230 feet to 328 feet (77 to 100 meters; Table 2.6-1). In addition to the wind turbines, one 138 kV overhead transmission interconnect line would connect the project to the transmission grid from a single substation. The transmission interconnect line would be 19.7 miles in length. The line would extend north from Cotterel Mountain through Cassia and Minidoka County and cross the Snake River where it would interconnect to transmission grid.

In Alternative D, as under Alternative C, the final selection of the exact make and model of wind turbine to be used depends on a number of factors, including equipment availability at the time of construction. The number of turbines and the resulting capacity of the project would depend on the type of technology used. Therefore, to capture a “reasonable range” of potential project impacts, Alternative D defines and evaluates a range of turbine sizes and associated facilities, and their potential impact on the environment.



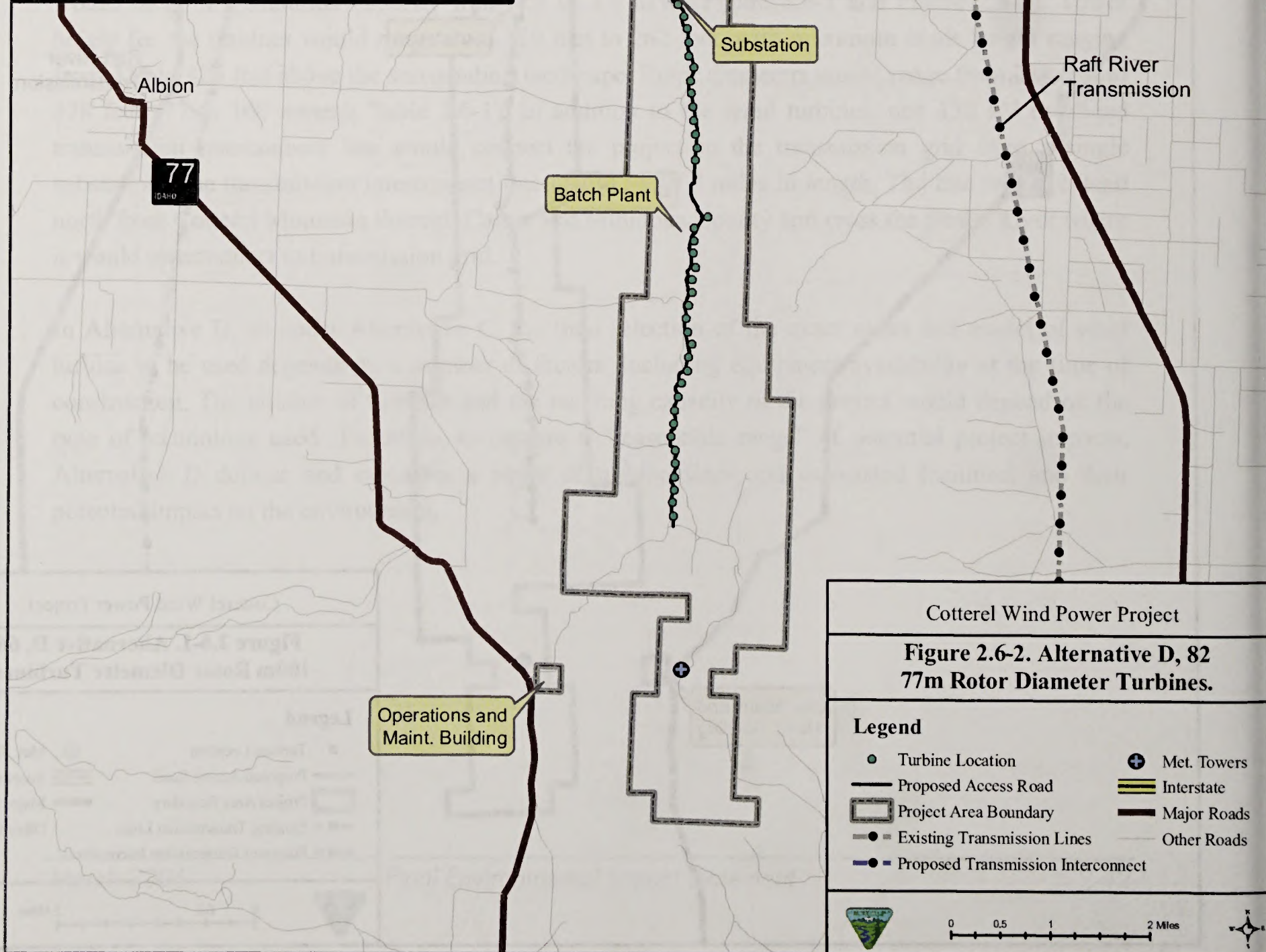
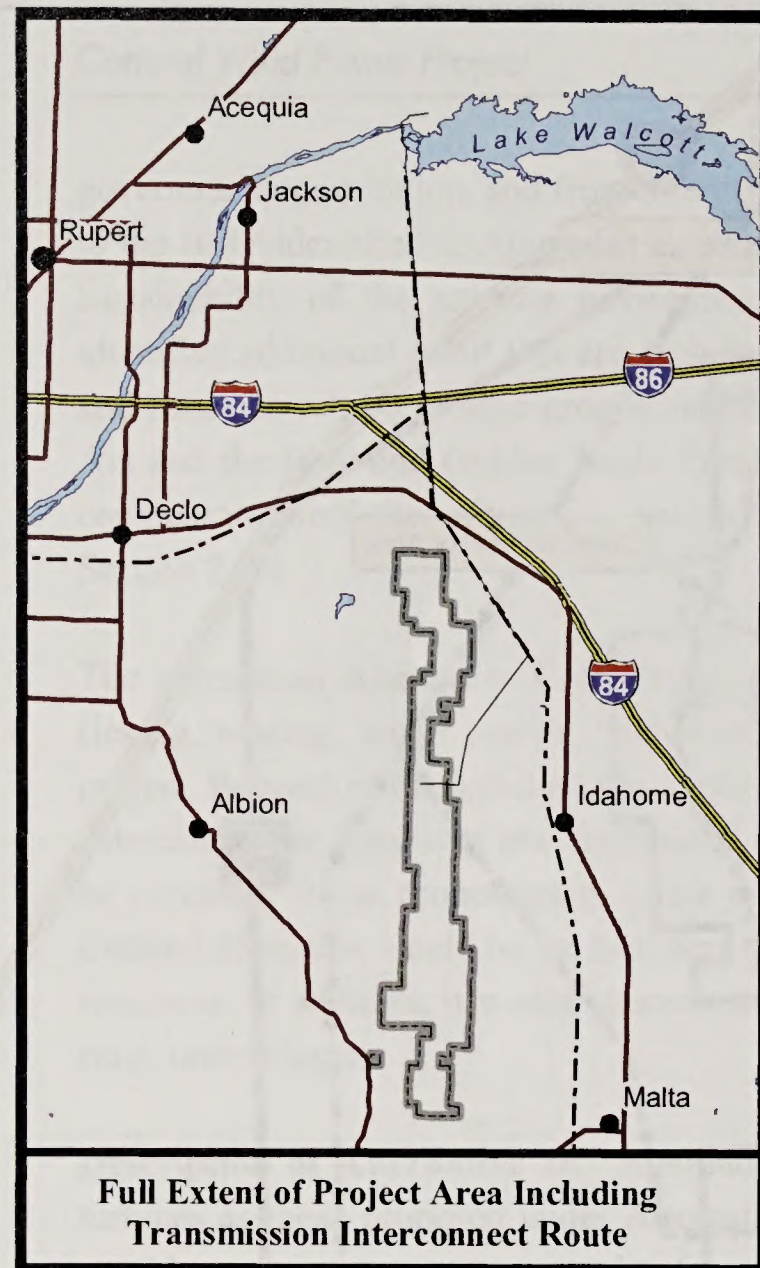


Table 2.6-1. Alternative D Project Features.

Number of turbines	66 to 82
Turbine nameplate	1.5 to 3.0 MW
Project nameplate	123 to 198
Total length of turbine strings	11.6 miles
Project roads	19.3 miles (total)
Existing (to be used without modification)	1.7 miles
Reconstructed	2.9 miles
New	14.7 miles
Buried electrical distribution lines	14 miles
Electrical trenching (outside of road bed)	3 miles
Number of substations	1
Number of O&M buildings	1
New transmission line	19.7 miles
Temporary transmission interconnect line access routes	4.7 miles
Meteorological towers	3

2.6.1 General Features of the Wind Power Project Under Alternative D

Wind Turbines

Wind turbines would be the same for Alternative D as described under Alternative C.

Substations

Substations would be the same for Alternative D as described under Alternative C.

Transmission Interconnect Lines

The transmission interconnect lines would be the same for Alternative D as described under Alternative C.

Roads

Under Alternative D only the existing north Cotterel Mountain Access road would be reconstructed and relocated. The south access road would have only minor modifications to improve safety, including: ditch shaping, corner softening, improved sight distance. Under this Alternative, the Proposed Project would require the reconstruction of about 2.9 miles of road and the construction of about 14.5 miles of new roads. Total estimated cut volume for road construction would be approximately 2,080,000 cubic yards. The estimated fill volume would be approximately 2,275,000 cubic yards. The total construction impact area would be about 282 acres. Following the reclamation of construction impact areas, the final Proposed Project would occupy an area of about 160 acres.

Access

Access for construction of the Proposed Project would be the same for Alternative D as described under Alternative C.

Trailer Pads

Trailer pads would be the same for Alternative D as described for Alternative C.

2.6.2 Public Access and Safety

Public access under Alternative D would be similar to Alternative C along the central ridgeline and turbine string. However, under Alternative D there would be no road construction or turbines sited along Cotterel Mountain's east ridge. The lower portion of the existing Cotterel Mountain summit road would have minor modifications made to improve safety. The existing Cotterel Mountain summit access road and primitive jeep trails along the east ridgeline would remain unchanged and would continue to be open to the public.

2.6.3 Operations and Maintenance (O&M)

Under Alternative D, access restrictions to the Proposed Project area by O&M personnel may be required to protect leking sage-grouse on a seasonal basis. During the leking season from March 1 through May 1, O&M personnel may be restricted from active sage-grouse lek sites areas from 4 a.m. to 11 a.m. Otherwise, O&M activities for Alternative D would be the same as described under Proposed Project Features Common to All Action Alternatives.

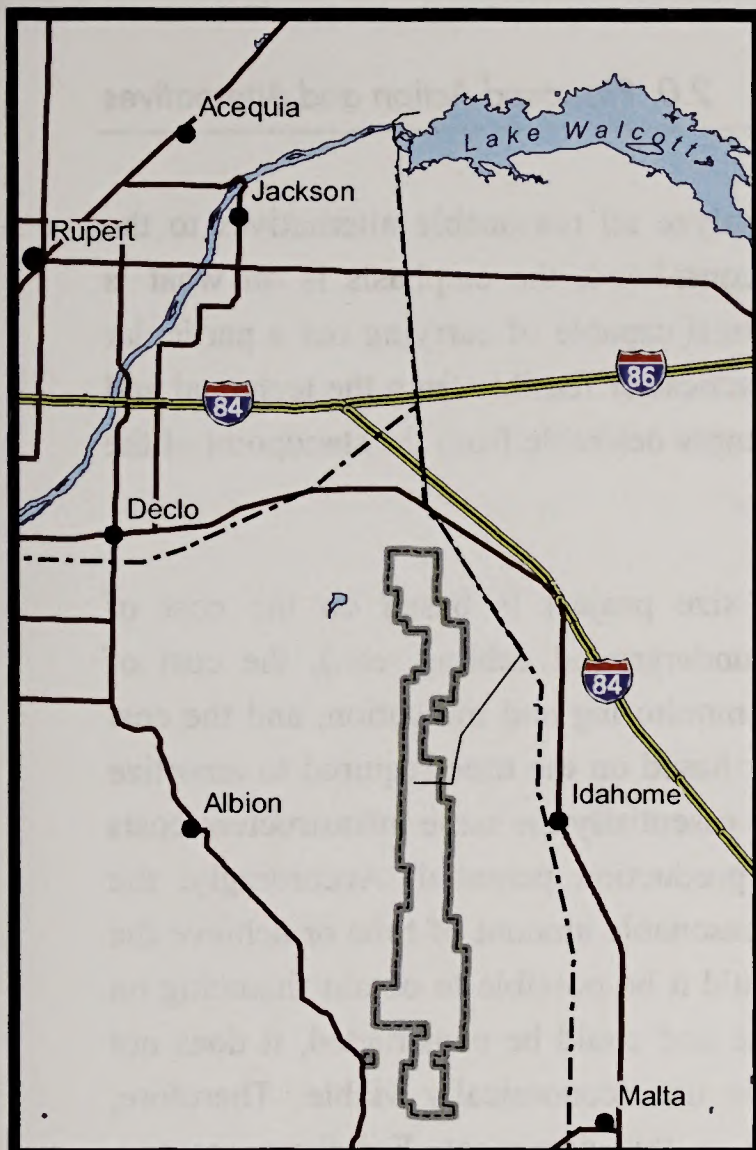
2.6.4 Required On-Site Monitoring, Adaptive Management and Compensatory (Off-Site) Mitigation

Required on-site monitoring, adaptive management and compensatory (off-site) mitigation would be the same for Alternative D as described under Alternative C.

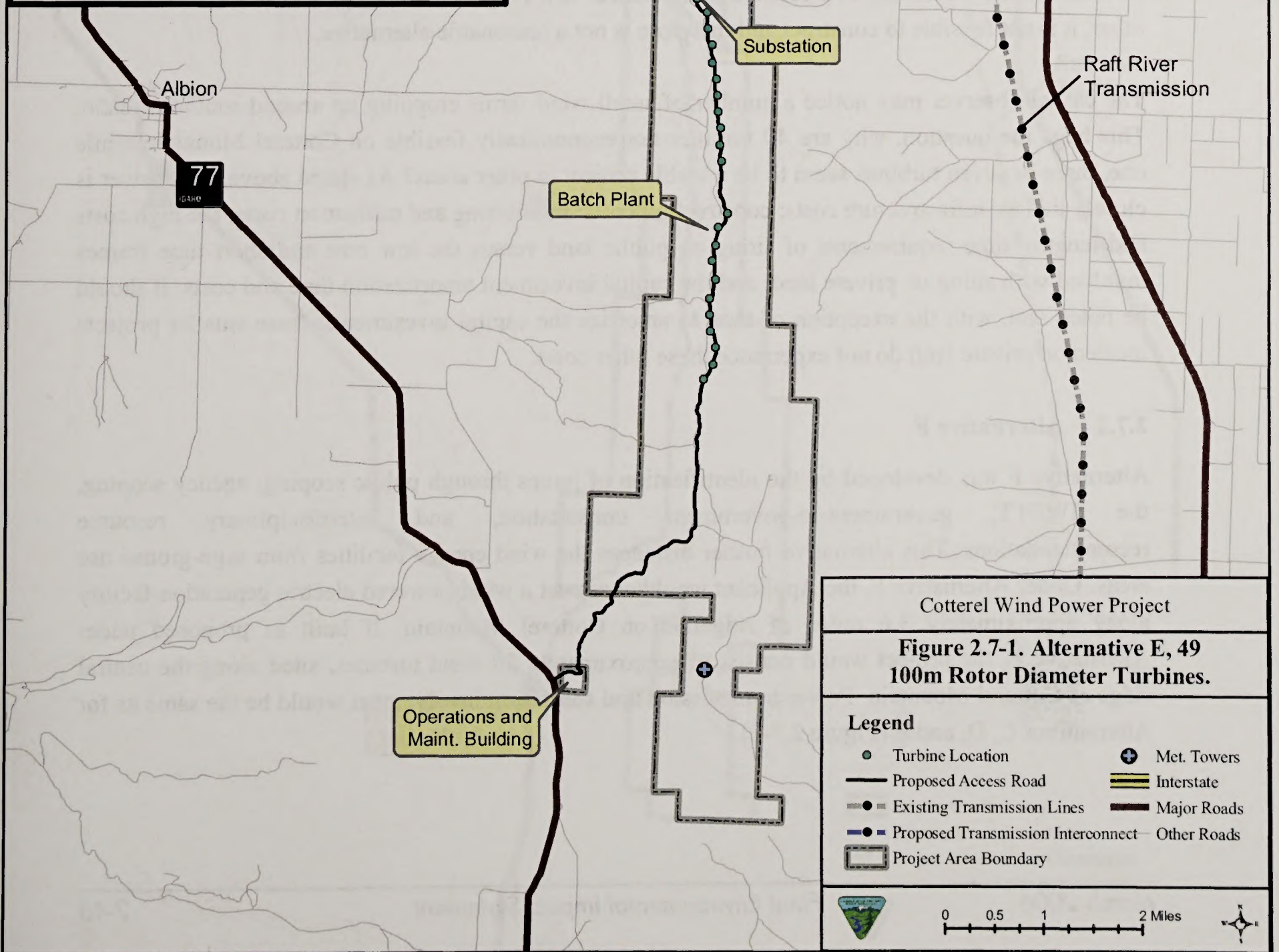
2.7 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

2.7.1 Alternative E

Alternative E was developed by the identification of issues through public scoping, agency scoping, the IWETT, government-to-government consultation, and interdisciplinary resource recommendations and is basically a modification of Alternative D (Figure 2.7-1). It was proposed as a possible method of further minimizing potential impacts to sage-grouse habitat and habitat use while maintaining an economically viable wind energy development. Alternative E, while avoiding the most direct suspected impacts to sage-grouse lek use and associated nesting at several key locations on the mountain, would effectively reduce the length of the turbine string to approximately 8.4 miles and reduce the number of turbines that could be constructed to a range of 40 to 49. This is substantially less than the minimum number of wind turbines disclosed by the Applicant as being economically viable to construct (66 turbines), operate and maintain at the Cotterel Mountain site.



Full Extent of Project Area Including
Transmission Interconnect Route



Cotterel Wind Power Project

Figure 2.7-1. Alternative E, 49
100m Rotor Diameter Turbines.

Legend

- Turbine Location
- Proposed Access Road
- - - Existing Transmission Lines
- ⋯ Proposed Transmission Interconnect
- ⬡ Project Area Boundary
- ⊕ Met. Towers
- ▬ Interstate
- ▬ Major Roads
- ▬ Other Roads



0 0.5 1 2 Miles



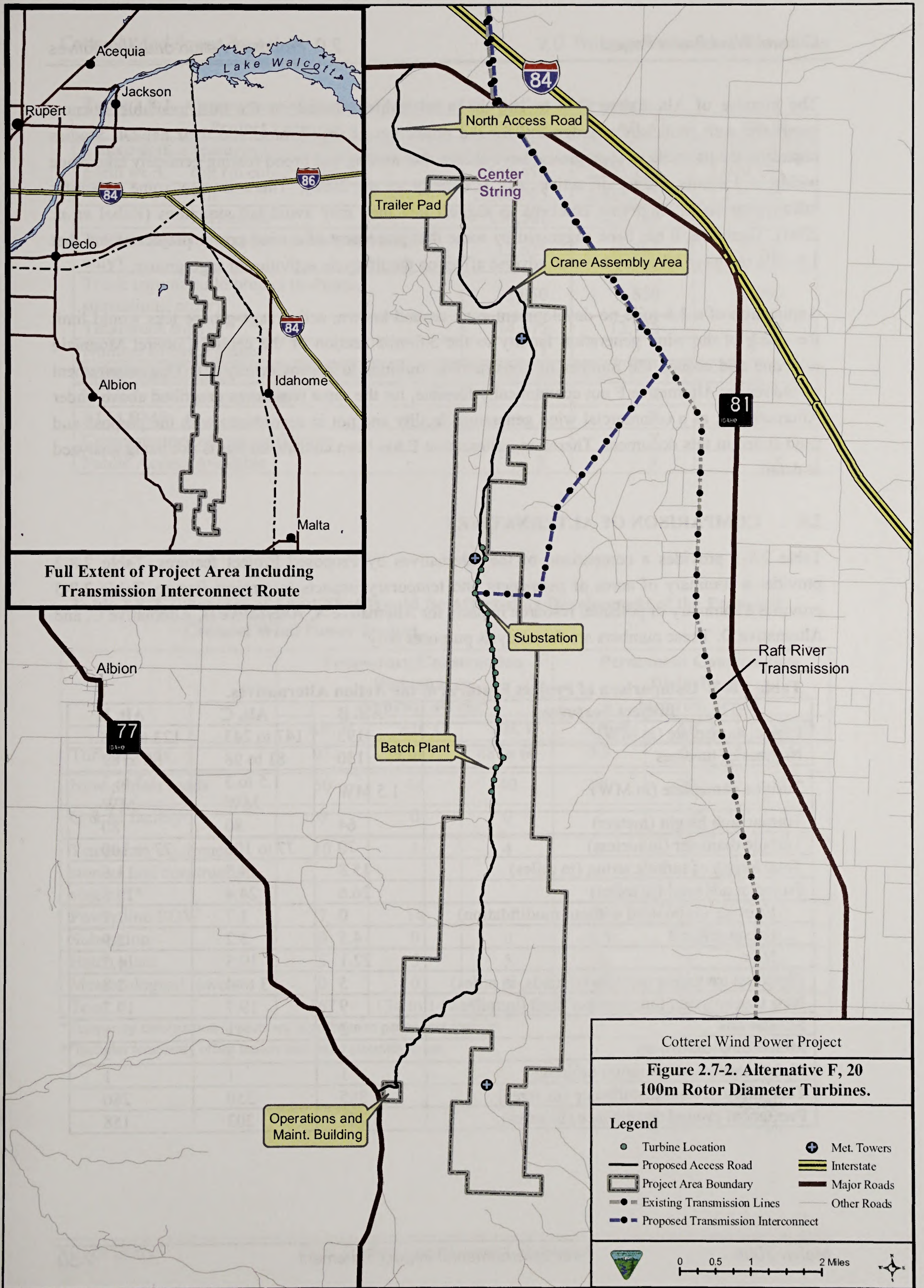
CEQ regulations at 40 CFR 1502.14 require an EIS to analyze all reasonable alternatives to the proposal. In determining the scope of alternatives to be considered, the emphasis is on what is "reasonable" rather than whether the Applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the Applicant (CEQ 40 Most Asked Questions 1981).

The Applicant's analysis and disclosure of a minimum size project is based on the cost of infrastructure (i.e. roads, substation, power transmission, underground cabling, etc.), the cost of construction on a remote, isolated mountaintop, the cost of monitoring and mitigation, and the cost and time required for permitting on public land. It is further based on the time required to amortize the capital investment of a project. Alternative E would have essentially the same infrastructure costs as Alternative D with approximately 60 percent of the production potential. Accordingly, the Applicant states that it is not possible to recoup costs in a reasonable amount of time or achieve the rate of return necessary for such a large investment, nor would it be possible to obtain financing on acceptable terms. While Alternative E is technically feasible and could be constructed, it does not meet the CEQ test of a reasonable alternative since it is not economically viable. Therefore, Alternative E does not meet the purpose and need stated in this document. For these reasons, Alternative E is not carried forward or analyzed in detail. It should be noted that in CEQ's definition of "reasonable," technical and economic are linked. If a Proposed Action does not meet one or the other, it is not feasible to construct and therefore is not a reasonable alternative.

The casual observer may notice a number of small wind farms cropping up around southern Idaho. This begs the question, why are 40 turbines not economically feasible on Cotterel Mountain while one, three or seven turbines seem to be a viable project in other areas? As stated above, the answer is closely tied to: infrastructure costs; construction costs; monitoring and mitigation costs; the high costs and lengthy time requirements of siting on public land versus the low cost and short time frames involved with siting on private land; and the capital investment amortization time and costs. It should be noted that, with the exception of time to amortize the capital investments, these smaller projects located on private land do not experience these other costs.

2.7.2 Alternative F

Alternative F was developed by the identification of issues through public scoping, agency scoping, the IWETT, government-to-government consultation, and interdisciplinary resource recommendations. This alternative further distances the wind energy facilities from sage-grouse use areas. Under Alternative F, the Applicant would construct a wind-powered electric generation facility along approximately 3.6 miles of ridgeline on Cotterel Mountain. If built as proposed under Alternative F, the project would consist of approximately 20 wind turbines, sited along the central ridge of Cotterel Mountain. Power transmission and substation involvement would be the same as for Alternatives C, D, and E (Figure 2.7-2).



The premise of Alternative F is to site the wind turbines based on the best available science, combined with professional judgment, for the protection of sage-grouse and their habitat. Studies regarding the lifecycle of sage-grouse have shown that nesting and brood rearing generally take place within a 1.8-mile radius of active leks (Connelly *et al.* 2000). There is also some scientific information on lesser prairie chickens to suggest that they may avoid tall structures (Robel *et al.* 2004). Therefore, it has been suggested by some that placement of a wind power project within that 1.8-mile radius of leks may have an adverse affect on the lifecycle activities of sage-grouse.

Application of a 1.8-mile no development zone around known, active sage-grouse leks would limit the siting of the wind generation facility to the 3.6-mile section of the central Cotterel Mountain ridgeline and reduce the number of constructible turbines to approximately 20. This requirement would render Alternative F not economically feasible, for the same reasons as described above under Alternative E, as a commercial wind generation facility and not in accordance with the purpose and need stated in this document. Therefore, Alternative F has been considered but is not being analyzed in detail.

2.8 COMPARISON OF ALTERNATIVES

Table 2.8-1 provides a comparison of the alternatives by Proposed Project features. Table 2.8-2 provides a summary of acres of permanent and temporary impacts by project feature. Table 2.8-3 provides a summary of potential resource impacts for Alternative A, Alternative B, Alternative C, and Alternative D. These numbers are for analysis purposes only.

Table 2.8-1. Comparison of Project Features of the Action Alternatives.

Project Features	Alt. B	Alt. C	Alt. D
Project nameplate (in MW)	195	147 to 243	123 to 198
Number of turbines	130	81 to 98	66 to 82
Turbine nameplate (in MW)	1.5 MW	1.5 to 3 MW	1.5 to 3 MW
Turbine hub height (meters)	64	80	80
Turbine diameter (in meters)	70	77 to 100	77 to 100
Total length of turbine string (in miles)	15.8	14.5	11.6
Project roads total (in miles)	26.6	24.4	19.3
Existing (to be used without modification)	0	1.7	1.7
Reconstructed	4.5	3.2	2.9
New	22.1	19.5	14.7
Electrical trenching (outside of roads, in miles)	5	3 to 4	2.8
New transmission Interconnect lines (in miles)	9	19.7	19.7
Substations	2	1	1
Meteorological towers	3	3	3
Maintenance and operation building	1	1	1
Temporary ground disturbance (in acres)	365	350	280
Permanent ground disturbance (in acres)	203	203	158

Table 2.8-1. Comparison of Project Features of the Action Alternatives.

Project Features		Alt. B	Alt. C	Alt. D
Construction features				
Earth work	Cut (in cubic yards)	2,663,496	2,203,176	2,079,286
	Fill	2,506,995	2,423,935	2,275,735
	Difference	+156,501	-220,759	-196,449
Truck trips to build project roads (road base only)		12,625	10,885	8,500
Truck trips to build project (turbines, substations, other)		2,050	1,850	1,250
Total truck trips		14,675	12,735	9,750
Number of batch plants		1	1	1
Mitigation				
Wildlife fatality monitoring		X	X	X
BLM BMP			X	X
Compensatory/off-site mitigation			X	X
Public Access Available		X	X	X

Table 2.8-2. Acreage of Land That Would Be Affected by Development of the Proposed Cotterel Wind Power Project.

	Temporary Construction Disturbance (approx. acres)*			Permanent Construction Disturbance (approx. acres)		
	Alt. B	Alt. C	Alt. D	Alt. B	Alt. C	Alt. D
Turbine pads	95	59 to 72	48 to 60	0.8	0.6	0.5
New project roads	50	48	40	200	202	157
O & M facility	0	0	0	2	2	2
Temporary equipment storage and construction staging**	10	8	4	0	0	0
Power line ROW	7	14	14	0	0	0
Substation	0	0	0	0.5	0.3	0.3
Batch plant	5	5	5	0	0	0
Meteorological towers	0	0	0	0.014	0.014	0.014
Total	167	134 to 147	111 to 123	202	205	159

*Temporary construction impacts are in addition to permanent impacts.

**Includes temporary office trailers and crane assembly areas.

Table 2.8-3. Summary Comparison of Resource Impacts for All Alternatives.

Resource Issue	Alternatives			
	A	B	C	D
PHYSICAL				
Air Quality	No impact	Criteria pollutants and greenhouse gases would temporarily be emitted during construction of the Proposed Project	Impact to climate or air quality would be similar to those described under Alternative B; however, the temporary effects would be slightly less due to less construction	Impact to climate or air quality for Alternative D would be similar to those described under Alternatives B and C; however, the temporary effects to air quality would be the least under Alternative D
Geologic Hazards	There would be no impact related to geology.	Shallow blasting to set wind turbine foundations and for road construction up to 203 acres disturbed	Shallow blasting to set wind turbine foundations and for road construction up to 203 acres disturbed	Shallow blasting to set wind turbine foundations and for road construction up to 158 acres disturbed
Paleontological Resources	No impact	No impact	No impact	No impact
Soils	There would be no impact related to soils	Up to 368 acres would be initially disturbed 165 acres would be reclaimed 203 acres of permanent impact to soils	Up to 350 acres would be initially disturbed Up to 147 acres would be reclaimed 203 acres of permanent impact to soils	Up to 270 acres would be initially disturbed Up to 112 acres would be reclaimed 158 acres of permanent impact to soils
Water Resources				
Surface Water	There would be no impact related to water resources	The Proposed Project would have a low potential to affect surface water resources	Same as Alternative B	Same as Alternative B
Ground Water	There would be no impact related to water resources	Blasting should not alter the flow of springs in the Proposed Project area	Same as Alternative B	Same as Alternative B

Table 2.8-3. Summary Comparison of Resource Impacts for All Alternatives.

Resource Issue	Alternatives			
	A	B	C	D
Noise				
Increased noise levels near residences and wildlife habitat	No effect Existing background noise levels in the area would continue	Noise from large trucks during construction would be temporary Operational impact from noise to sensitive receptors are not expected to occur	Same as Alternative B	Same as Alternative B – shorter in duration Operational impact would have less of a potential to affect recreational users
BIOLOGICAL				
Vegetation				
Removal of vegetation	No change to the existing vegetation beyond the levels identified in the Cassia RMP	Up to 368 acres of vegetation would be directly affected by construction of all Proposed Project features Up to 165 acres reclaimed 203 acres of permanent impact to vegetation	Up to 350 acres of vegetation would be directly affected by project construction of all Proposed Project features Up to 147 acres reclaimed 203 acres of permanent impact to vegetation	Up to 282 acres of vegetation would be directly affected by project construction of all Proposed Project features Up to 123 acres reclaimed 158 acres of permanent impact to vegetation
Noxious weeds	No change to the existing vegetation beyond the levels identified in the Cassia RMP	Disturbance of vegetation could lead to the establishment and spread of noxious weeds, which would increase direct competition for limited resources (nutrients, water, space, etc.) with native or desired vegetation Indirectly, these species could augment the amount and continuity of fuels, which could lead to increased fire return intervals	Same as Alternative B	Same as Alternative B

Table 2.8-3. Summary Comparison of Resource Impacts for All Alternatives.

Resource Issue	Alternatives			
	A	B	C	D
Wildlife				
Loss of big game winter range	There would be no adverse impact	Winter range would be permanently eliminated on up to 105 acres of mule deer habitat and 194 acres of bighorn sheep habitat Mountain lions could be initially displaced by construction activities, but would likely habituate to Proposed Project features over time	Winter range would be permanently eliminated on up to 62 acres of mule deer habitat and 162 acres of bighorn sheep habitat Impacts to mountain lions would be the same as Alternative B	Winter range would be permanently eliminated on up to 58 acres of mule deer habitat and 115 acres of bighorn sheep habitat Impacts to mountain lions would be the same as Alternative B
Big game displacement and/or stress	There would be no adverse impact	Displacement of big game from Proposed Project construction and operation. Potential displacement impact from increased human activity.	Same as Alternative B	Smaller project size would result reduced area of displacement and less areas of improved public access Displacement would still occur but on a smaller scale
General wildlife habitat	There would be no adverse impact	Wildlife could be negatively affected by increased traffic and human presence on Cotterel Mountain Permanent loss of 203 acres of potential habitat	Same as Alternative B	Permanent loss of 158 acres of potential habitat Smaller project size would result in reduced area of displacement and less areas of improved public access

Table 2.8-3. Summary Comparison of Resource Impacts for All Alternatives.

Resource Issue	Alternatives			
	A	B	C	D
Estimated annual avian and bat mortality due to collision with wind towers or power lines	There would be no adverse impact	Raptors = 0-63 mortalities All birds = 0-934 mortalities Bats = 0-667 mortalities Upper end mortality estimates are based on total avian numbers from point counts, mortality at other operating wind projects and total rotor swept area with an operating capacity factor of 35% applied. This estimate assumes that all birds flying within the rotor swept area would be killed (worst case scenario)	Raptors = 0-81 mortalities All birds = 0-1188 mortalities Bats = 0-848 mortalities Assumes larger rotor swept area Same as Alternative B	Raptors = 0-66 mortalities All birds = 0-968 mortalities Bats = 0-691 mortalities Assumes larger rotor swept area Same as Alternative B
Nesting raptors	There would be no adverse impact	Wind turbines would be sited greater than 1/4 mile from the three golden eagle nests Blasting during nesting season could result in nest abandonment Resident hunting raptors may avoid the vicinity of the turbines Habitat lost to construction would result reduced prey base	Same as Alternative B Same as Alternative B	Same as Alternative B Same as Alternative B
Loss of sage-grouse winter range	Existing situation expected to continue	Direct loss of 68 acres Displacement from up to 6,435 acres	Direct loss of 48 acres Displacement from up to 5,716 acres	Direct loss of 34 acres Displacement from up to 4,585 acres

Table 2.8-3. Summary Comparison of Resource Impacts for All Alternatives.

Resource Issue	Alternatives			
	A	B	C	D
Loss of sage-grouse nesting habitat	Existing situation expected to continue	Direct loss of 33 acres Displacement from up to 5,605 acres	Direct loss of 28 acres Displacement from up to 4,890 acres	Direct loss of 15 acres Displacement from up to 3,194 acres
Displacement of sage-grouse from lek sites	Existing situation expected to continue	Direct loss of 84 acres Displacement from up to 3,395 acres	Direct loss of 77 acres Displacement from up to 3,345 acres	Direct loss of 52 acres Displacement from up to 3,255 acres
Displacement of bats from hibernation sites	Existing situation expected to continue	Noise and percussion from blasting, drilling, digging, and movement of large vehicles could displace roosting, breeding, or hibernating bat species	Same as Alternative B	The smaller project would require less blasting resulting in a reduced potential for displacement of roosting, breeding, or hibernating bat species
Threatened and Endangered Species				
Bald Eagle	There would be no adverse impact	Small potential for direct mortality or injury from electrocution, collisions with transmission lines, or turbine blades	Same as Alternative B	Same as Alternative B
Gray Wolf	Gray wolves are not known to occur on Cotterel Mountain; therefore, there would be no adverse impact	Same as Alternative	Same as Alternative A	Same as Alternative A

Table 2.8-3. Summary Comparison of Resource Impacts for All Alternatives.

Resource Issue	Alternatives			
	A	B	C	D
BLM Sensitive Species	Existing situation expected to continue	Cliff chipmunk populations would be affected during construction. These areas would likely be avoided or abandoned, but once construction is complete and disturbance levels decline, cliff chipmunks would be expected to reoccupy habitats near the facility Nesting and non-breeding golden eagles could be adversely affected not only by construction disturbance, but also from potential collisions with turbines	The impact of Alternative C to special status species would be similar to those expected to occur under Alternative B, with slightly smaller areas of permanent and temporary impacts from project construction and fewer turbines	The impact of Alternative D to special status species would be similar to those expected to occur under Alternative B and C, with slightly smaller areas of permanent and temporary impacts from project construction
CULTURAL RESOURCES				
Prehistoric Resources	There would be no effect	No Effect	Same as Alternative B	Same as Alternative B
American Indian Concerns	There would be no effect	Concerns have been identified	Same as Alternative B	Same as Alternative B

Table 2.8-3. Summary Comparison of Resource Impacts for All Alternatives.

Resource Issue	Alternatives			
	A	B	C	D
Historical Resources	There would be no effect	Alternative B would have no impact to sites CM-S-5, CM-S-16, CM-S-20, CM-S-22, or 10CA629 since each of these is located outside of the area of potential effects and would be avoided Proposed Project impacts to the remaining 21 sites, and to any sites discovered during additional survey of the transmission lines and access roads, would range from no impact to high impact depending on the degree of loss of integrity to the site and on the significance of the site	Impacts for Alternative C are similar to impacts for Alternative B with the exception that the Proposed Project would have no impact to site CM-S-17 in Alternative C. This site would be avoided	Impacts for Alternative D are similar to impacts for Alternative C with the exception that the Proposed Project would have no impact to sites CM-S-21, CM-S-22, CM-S-18, and CM-S-1 in Alternative D. Alternative D would have the fewest impacts to historical and cultural resources
SOCIOECONOMIC				
Regional Economy and Community	There would be no impact or changes to regional or local socioeconomic conditions. The Proposed Project area would continue to function as a dispersed recreation area and would continue to provide seasonal grazing opportunities for livestock. The Mini-Cassia area would not experience the tax revenue benefits that would be associated with the project	Impact due to temporary direct and secondary increase in jobs, income, and spending Construction cost of \$200 million. Local and regional labor force could fill positions, and local lodging could accommodate workers Increase in population would be small	Impacts would be similar to Alternative B	Temporary direct and secondary increase in jobs, income and spending. Construction cost of approximately \$100 million One-time influx of sales tax revenue, less than under Alternative B

Table 2.8-3. Summary Comparison of Resource Impacts for All Alternatives.

Resource Issue	Alternatives			
	A	B	C	D
Regional Economy and Community (continued)		No effect on local businesses No impact on tourism Impact of one-time influx of sales tax revenue of approximately \$500,000 Permanent increase in jobs, income, and spending. Annual operation cost would be \$4.5 million No relocations, displacements, substantial growth of concentration of population, and related demand for public services would occur Additional property tax revenue to the school district		Annual operation cost would be \$2.3 million. Permanent increase in jobs, income, and spending would be less than under Alternative B Beneficial impact upon annual property tax revenues, similar in type but less than Alternative B Beneficial impact of permanent increase in sales tax revenue, similar in type but less than under Alternative B Impact to population and demand for public services would be less than under Alternative B
Property Values	There would be no effect	Impacts to property values are not likely	Same as Alternative B	Same as Alternative B
Environmental Justice	There would be no effect	Environmental justice impacts are limited to American Indian Concerns	Same as Alternative B	Same as Alternative B

Table 2.8-3. Summary Comparison of Resource Impacts for All Alternatives.

Resource Issue	Alternatives			
	A	B	C	D
LAND USE				
Public Access	There would be no effect	Public access to federal and state lands within the Proposed Project area would not be restricted, except during construction of the project for safety purposes	Public access on the ridgeline would be altered from Alternative B to become a combination of new project roads and existing and newly constructed primitive roads	Same as Alternative C
		Following project construction, public access to federal and state lands would be improved with 24.5 miles of new or reconstructed roads	Public use of project roads would be restricted through a series of gates and natural rock barriers but would not result in a loss of access to traditional use areas	
			Primitive access would be maintained wherever possible by linking the existing primitive road system through construction of new primitive roads	

Table 2.8-3. Summary Comparison of Resource Impacts for All Alternatives.

Resource Issue	Alternatives			
	A	B	C	D
Recreation	Based on the activities outlined in the Cassia RMP, no change to recreation opportunities or degree of typical use would be anticipated in the area, beyond some minor modifications to recreation facilities and trails These modifications are expected to enhance the recreation spectrum in the Proposed Project area	During construction of the Proposed Project, noise, dust, traffic, equipment use, and associated human activities would change the character of the area and result in a temporary loss of recreational opportunities Wind turbines would be located within about 760 feet of the Coe Creek picnic site Proposed Project could result in change of visitor/use or experience. Changes to recreation use would not alter the current recreational opportunities spectrum category (semiprimitive motorized) for Cotterel Mountain	Construction impacts would be the same as Alternative B Wind turbines would be located within about ¼ mile (1,400 feet) of the Coe Creek picnic site Visitors may be able to hear the turbines during times of turbine operation but less so than under Alternative B	Construction impacts would be the same as Alternative B Wind turbines would be located within about ¼ mile (1,400 feet) of the Coe Creek picnic site Overall smaller project would result in reduced impacts to recreational users
Land Status	There would be no effect	No affect to existing surface land ownership or mineral ownership	Same as Alternative B	Same as Alternative B
Rights-of-Ways	There would be no effect	Future ROW's would not be affected by the Proposed Project Approval would continue to be obtained from the BLM in accordance with the processes outlined in 43 CFR 2800 and the BLM Right -of-Way Handbook (H-2800-1). An amendment to the land use plan may be required	Same as Alternative B	Same as Alternative B

Table 2.8-3. Summary Comparison of Resource Impacts for All Alternatives.

Resource Issue	Alternatives			
	A	B	C	D
Livestock Grazing	Based on the Cassia RMP no changes to grazing would be expected beyond some vegetation treatments or minor range improvement projects There would be no modification of the existing acres, AUM, range conditions, or improvements outside those identified in the Cassia RMP	Temporary loss of up to 165 acres of rangeland vegetation Permanent impacts to 203 acres of rangeland vegetation would result in a loss of livestock forage	Temporary loss of up to 147 acres of rangeland vegetation Permanent impacts to 203 acres of rangeland vegetation would result in loss of livestock forage	Temporary loss of up to 112 acres of rangeland vegetation Permanent impacts to 158 acres of rangeland vegetation would result in loss of livestock forage
VISUAL RESOURCES				
Visual Resources	There would be no effect	Vehicle and heavy equipment traffic associated with project construction could result in short-term impacts The operational phase of the project would have long-term impacts to surrounding view sheds and communities Permanent impacts to visual resources would be greatest under this alternative	Short-term impacts to visual resources would be similar to Alternative B, but with fewer trips needed during the construction phase Long-term impacts would also be slightly less based on the reduced number of turbines	Short-term impacts to visual resources would be the lowest under this alternative, and would require the fewest trips during the construction phase Long-term impacts would also be lowest, based on the reduced number of turbines
HAZARDOUS MATERIALS				
Hazardous Materials	There would be no effect	During construction of Alternative B, BMP would be used to avoid spills, leaks, or dumping of hazardous substances	Same as Alternative B	Same as Alternative B

Table 2.8-3. Summary Comparison of Resource Impacts for All Alternatives.

Resource Issue	Alternatives			
	A	B	C	D
FIRE MANAGEMENT				
Fire and Fuels	Under the Alternative A, fire management's ability to suppress wildfire and manage surface fuels within the Proposed Project area would not be affected. Fire frequency and intensity would not be changed by Alternative A	The risk of human caused ignitions would increase Suppression strategies would be limited by the presence of turbines and buried electrical cables Improved, wider roads would act as fire breaks and provide improved access and shorter ground response times Towers would increase the lightning-attractivity of Cotterel Mountain resulting in a potential increase in lightning strikes. This may or may not affect the number of lightning caused ignitions	Same as Alternative B	Impacts would be similar to B, but the risk of human caused ignitions would lower due to overall smaller project size Suppression strategies would not be limited on east ridge of Cotterel Mountain

2.9 AMENDING THE EXISTING CASSIA RMP

Public land management actions, including the granting of ROW under Title V of the Federal Land Policy and Management Act of 1976, are guided by decisions recorded in the Cassia RMP approved on January 24, 1985. The RMP currently restricts ROW to existing facilities/localities within Management Area 11 (Cotterel Mountain) and thus, the proposed Cotterel Wind Power Project development project is not consistent with the RMP.

When the RMP was completed, development of wind energy was not considered as a potential use on Cotterel Mountain. Since that time, advances in technology and demand for energy, particularly a diversified energy portfolio including renewable sources, have made wind energy development both cost effective and desirable. Wind resource studies, both existing and ongoing as part of this analysis, have shown that Cotterel Mountain is a very good renewable wind resource and potential energy production site.

2.9.1 Purpose and Need to Amend the Existing Cassia RMP

Since the Proposed Project is not consistent with the current direction in the Cassia RMP, there is a legal requirement to amend the land use plan if any of the action alternatives (Alternatives B, C and D) in this analysis are selected. Alternative A would not require an amendment. The planning regulations at 43 CFR 1601 provide for plan amendments for actions that are not presently in conformance with the plan.

The Cassia RMP Management direction for Management Area 11 (which encompasses the Cotterel Mountain range) and generally for the whole area, emphasize the following:

- Expand dispersed recreation opportunities on approximately 18,000 acres south of the communication facility;
- Limit rights-of-way to existing facilities/localities;
- Manage the area to maintain scenic quality and open space;
- Improve 31,212 acres of poor and fair condition rangeland to good;
- Provide 5,278 animal unit months of forage for livestock;
- Provide forage for and following mule deer by season of use: 403 spring; 403 summer; 403 fall; 563 winter;
- Provide yearlong forage for 127 antelope;
- Maintain or improve 6,414 acres of crucial deer winter range and 703 acres of sage-grouse brood-rearing habitat;
- Protect nesting ferruginous hawks from human disturbance;
- Control surface disturbing activities on 5,677 acres having soils with high erosion potential;
- Transfer 440 acres out of federal ownership (this action has already been completed);
- Protect any known and potential ferruginous hawk nesting sites (isolated juniper trees);

- Restrict activity within 2,300 – 3,000 feet of known ferruginous hawk nest sites from March 1 to July 15;
- No surface occupancy within ½-mile of active ferruginous hawk nest sites;
- Maintain cover in deer migration routes;
- Protect meadow seeps and springs to provide for needed production of water, forbs and insects within upland game ranges; and
- Improve raptor habitat by modifying selected sections of power lines where a problem has been identified.

These management objectives were developed in 1985 and are guidelines to help achieve what was then the desired future condition of the management area. While some of the objectives have been achieved, the BLM continues to work toward those objectives that are still desired.

The purpose of the proposed amendment is to modify the ROW restriction in Management Area 11 (containing the Cotterel Mountain range) such that granting of a ROW for and construction of a wind energy development would be consistent with the land use plan.

2.9.2 Planning Process

The planning action is to amend the Cassia RMP as a part of this EIS. This action is being done using the BLM 1600 manual guidance, Idaho State BLM instruction memoranda, and the planning regulations published as 43 CFR, part 1600.

To initiate the plan amendment process, a Notice of Intent (NOI) to prepare a land use plan amendment was published in the Federal Register and local newspapers in December of 2002. The notice invited the public, state and local governments and other federal agencies to participate in the planning process by attending any or all of three public scoping meetings held in Albion, Burley and Boise in January of 2003 and submitting comments in person or by mail. In addition to the publication, the scoping statement was sent out to a mailing list of approximately 150 interested parties. A large paid advertisement was also placed in the local newspapers by the Applicant announcing the public meetings. Briefing sessions were held in February, March and April of 2003 for County Commissioners, City Councils and other interested groups around the Mini-Cassia area. Through public meetings, letters, briefings and other notices, the public has been given the opportunity to comment on and provide additional information on this proposal. In addition, government-to-government consultation was conducted with both the Shoshone-Bannock and the Shoshone-Paiute Native American Tribes and BLM coordinated closely with other state and federal agencies with an interest in the Proposed Project. All comments were considered in preparation of this analysis. These considerations brought to light additional issues and prompted additional and more comprehensive wildlife and wildlife habitat studies for preparation of the analysis.

2.9.3 Planning Issues and Criteria

The NOI listed the planning issues BLM anticipated and invited the public, other federal agencies, and state and local governments to identify additional concerns or issues during scoping meetings and the 60-day comment period that followed.

Planning Issues

The issues identified through public scoping and used to develop alternatives are as follows:

- Migratory birds
- Sage-grouse
- Maintaining and protecting tribal treaty rights or heritage links to public lands
- Public access
- Visual resources
- Raptor migration
- Consistency with the RMP

Planning Criteria

The following general planning criteria are being considered in the development of the proposed plan amendment:

- NEPA
- Existing laws, regulations, and BLM policies
- Plans, programs and policies of other federal, state and local governments, and Indian Tribes
- Public input
- Future needs and demands for existing or potential resource commodities and values
- Past and present use of public and adjacent lands
- Environmental impacts
- Social and economic values
- Public welfare and safety
- President's National Energy Policy

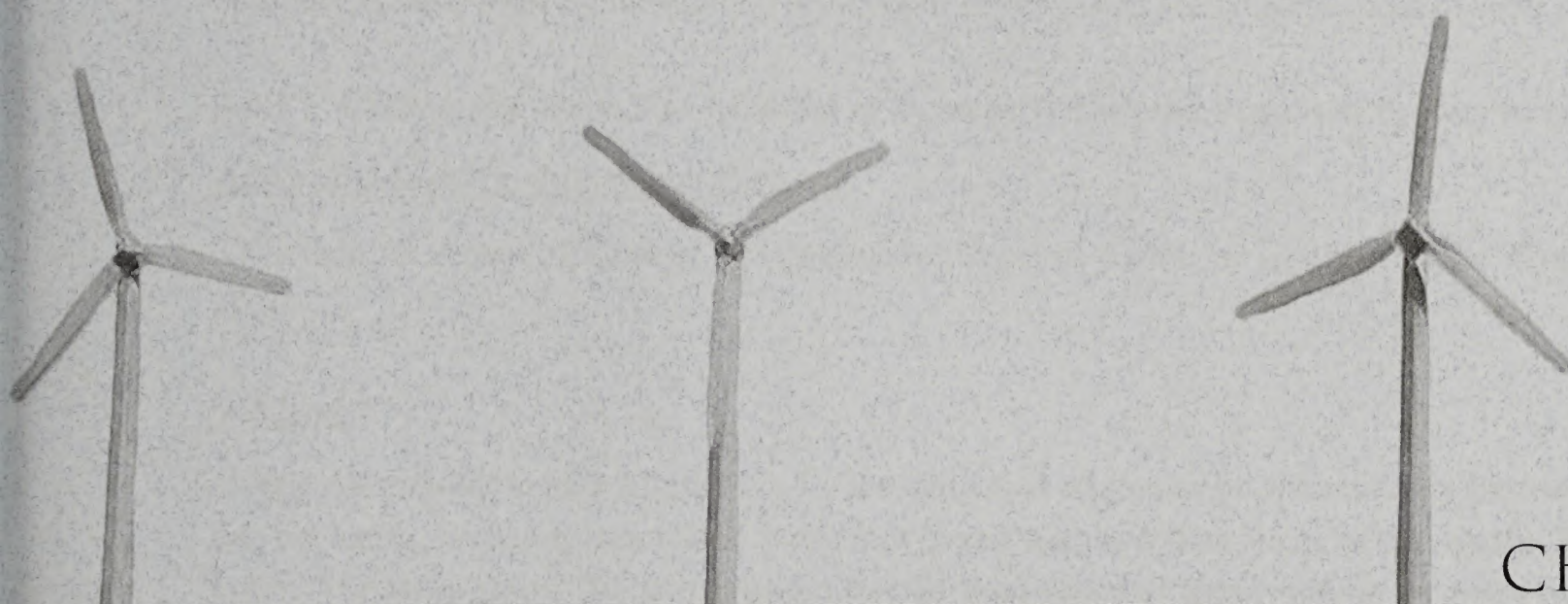
2.9.4 Proposed Plan Amendment to the Existing Cassia RMP

Alternatives B, C, or D if selected, would require a plan amendment to the Cassia RMP. This proposed amendment would allow the granting of a ROW on Cotterel Mountain for a wind energy development project and related transmission interconnect line. There is currently a restriction in the Cassia RMP that limits ROW to existing facilities and locations. This restriction would be rewritten to allow the development of one wind energy project. The amended restriction would read, "limit rights-of-way to existing facilities/localities, with the exception of one wind energy project."

The proposed amendment would also involve changing the language in item B from the Resource Management Objectives on page 39 of the Cassia RMP which currently reads: "Manage the area to maintain scenic quality and open space." The new language would read: "Manage the area to maintain scenic quality and open space consistent with the Visual Resource Management (VRM) classes for management area 11 and with the exception of the development of one wind energy project." The area is classified VRM Class IV, in which, projects such as the proposed action are acceptable. In addition, the existing Resource Management Objective G, also on page 39 of the RMP currently reads: "Maintain or improve 6,414 acres of crucial deer winter range and 703 acres of sage-grouse brood-rearing habitat." It would be revised to read as follows: "Maintain or improve 6,414 acres of crucial deer winter range" (Alternatives B, C, and D); "Maintain or improve 600 acres of sage-grouse brood rearing habitat" (Alternatives B and C); or "Maintain or improve 703 acres of sage-grouse brood rearing habitat" (Alternative D).

Additional ROW proposals would not be considered under the proposed amendment. If additional ROW are proposed in this management area, which appear to have merit, they would require additional amendments to the RMP and be subject to full and complete analysis in accordance with NEPA.

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CHAPTER 3

AFFECTED ENVIRONMENT

3.0 AFFECTED ENVIRONMENT

The purpose of this chapter is to describe the existing or affected environment, including conditions and trends that could be affected by the alternatives described in Chapter 2. Information about the landscape, cultural, natural, and human environment is provided to describe more fully the statement of needs explained in Chapter 1. The affected environment also sets the foundation for understanding and evaluating the alternatives discussed in Chapters 2 and the environmental consequences discussed in Chapter 4.

This chapter focuses on those portions of the environment that are directly related to the conditions and resource categories being addressed by the alternatives. The description is not meant to be a complete portrait of the study area, but is intended to portray the conditions and trends of most concern to the public and the Bureau of Land Management (BLM). Indicators for the impact assessment have been established by resource to better assess the consequences of each alternative.

3.0.1 Critical Elements Not Affected or Present Within the Proposed Project Area

Areas of Critical Environmental Concern

There are no Areas of Critical Environmental Concern within or adjacent to the Proposed Project area.

Wetlands

Under Alternative C and Alternative D, the proposed transmission interconnect line would parallel, but not enter, wetlands associated with back-water and overflow areas of the Snake River directly below Minidoka Dam. The transmission interconnect line will also cross the air space over the Snake River. No impacts to wetlands would occur from these actions.

Wild and Scenic Rivers

There are no wild and scenic rivers within or adjacent to the Proposed Project area.

Wilderness

There are no wilderness areas within or adjacent to the Proposed Project area.

Floodplains

Under Alternative C and Alternative D, the proposed transmission interconnect line would cross the air space over the Snake River. No impacts to the floodplain of the Snake River would occur from this action.

Farm Lands

No impacts to farm lands would occur under any of the Proposed Project alternatives.

3.1 PHYSICAL RESOURCES

3.1.1 Climate and Air Quality

Climate

The nearest climate recording station from the Proposed Project area is at the town of Malta, located approximately five miles to the east of the Proposed Project area at the base of Cotterel Mountain. The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS, formerly Soil Conservation Service) does not believe that the Malta station is entirely representative of the weather patterns throughout the area. The Malta weather station is located in the rain shadow of several mountains in the area, including Cotterel Mountain, Jim Sage Mountain, Mount Harrison, and Mount Independence. The average annual precipitation ranges from 12 to 16 inches throughout these mountains at elevations below about 6,000 feet. Above 6,000 feet, precipitation can range from 14 to more than 25 inches per year. Approximately 60 percent of the precipitation in the area falls in April through September. Average seasonal snowfall at the Malta station is about 18 inches (USDA, NRCS 1986). On the higher mountains more than 50 percent of the precipitation may fall as snow.

At the Malta station, the winter average temperature is 29 degrees Fahrenheit (°F), the average daily minimum temperature is 10°F, and the extreme historical low was -27°F. In summer, the average temperature is 60°F and the average daily maximum temperature is 85°F with an extreme historical high of 104°F (USDA, NRCS 1986).

Wind on Cotterel Mountain typically blows from west to east with minor seasonal variations. Winter snowfall blows clear on some portions of the mountain while forming deep drifts on others. During winter there are periods when low clouds settle over the mountain. When temperatures are low enough, these clouds can create freezing fog that forms rime ice on the west face of trees, shrubs, fences, and other structures. In the summer, afternoon thunderstorms can form resulting in heavy rainfall events with lightening and strong winds.

Air Quality

The Proposed Project would be located in Cassia and Minidoka Counties, Idaho, in United States (U.S.) Environmental Protection Agency (EPA) Air Quality Control Region 63. The area is classified as attainment or unclassifiable for all of the following federal and state criteria air pollutants:

- Carbon monoxide (CO);
- Nitrogen dioxide (NO₂);
- Particulate matter with an aerodynamic diameter less than 10 microns (PM₁₀);
- Oxides of sulfur (SO_x);
- Ozone (O₃); and
- Lead (Pb).

The National Ambient Air Quality Standards (NAAQS) for criteria pollutants are shown in Table 3.1-1. These match the Idaho Ambient Air Quality Standards listed in the Idaho Administrative Rules (IDAPA) 58.01.01.577.

Table 3.1-1. National Ambient Air Quality Standards.

Pollutant	Averaging Period	NAAQS ^a
CO	1-hour	40 mg/m ³
	8-hour	10 mg/m ³
NO ₂	Annual	100 µg/m ³
PM ₁₀	24-hour	150 µg/m ³
	Annual	50 µg/m ³
SO _x (measured as SO ₂)	3-hour	1,300 µg/m ³
	24-hour	365 µg/m ³
	Annual	80 µg/m ³
O ₃	1-hour	235 µg/m ³
Pb	Quarterly	1.5 µg/m ³

^amg/m³ = milligrams per cubic meter

µg/m³ = micrograms per cubic meter

CO = Carbon monoxide

NO₂ = Nitrogen dioxide

PM₁₀ = Particulate matter with an aerodynamic diameter less than 10 microns

SO_x = Oxides of sulfur

O₃ = Ozone

Pb = Lead

All areas throughout the country are assigned to one of three different classes of air quality protection. These are called Prevention of Significant Deterioration (PSD) Classes I, II, and III. Essentially, they help to ensure that the air quality in clean air areas remains clean, and does not deteriorate to the level of the NAAQS. The mechanism created by Congress to meet this goal is the establishment of “PSD increments.” These increments define the maximum allowable increases over baseline concentrations that are allowed in a clean air area for a particular pollutant. These increments are promulgated in the EPA PSD regulations at 40 Code of Federal Regulations (CFR) 52.21(c). Idaho has adopted these increments as state regulation in IDAPA 58.01.01.577.

In the 1977 Clean Air Act Amendments, Congress designated all international parks, national wilderness areas, and national memorial parks, which exceed 5,000 acres in size, and all national parks, which exceed 6,000 acres in size as mandatory PSD Class I areas. Class I areas are to receive special protection from degradation of air quality, and the most stringent PSD increments apply in these areas. The Class I areas closest to the Proposed Project area are: the Craters of the Moon National Monument, located 60 miles north of the proposed area, and the Jarbidge Wilderness area in Nevada, located 75 miles southwest of the proposed area. All of Cassia County and Minidoka County and the remainder of Idaho are designated as PSD Class II areas. PSD Class II areas are those that need reasonably or moderately good air quality protection. Most proposed development projects can

be accommodated within the increments set for PSD Class II areas. There are no Class III areas in Idaho.

The two pollutants of concern in Idaho are PM_{10} and CO; PM_{10} is currently the most problematic pollutant in Idaho. PM_{10} sources include windblown dust, re-entrained road dust, smoke (residential, agricultural, and forest fires), industrial emissions, and motor vehicle emissions (IDEQ 2001). There are five areas in Idaho designated as PM_{10} nonattainment. The PM_{10} nonattainment area nearest to the proposed area is located approximately 70 miles northeast at Fort Hall, Idaho.

PM_{10} was monitored at the Rupert active ambient air monitoring station by IDEQ from 1995 to 1998. Rupert is located approximately 14 miles northwest of the proposed area in Minidoka County. Data collected from 1995 to 1998 indicate that the PM_{10} NAAQS were not exceeded at this station during this time. From 1995 to 1998, the mean annual PM_{10} concentration was $23 \mu\text{g}/\text{m}^3$ and the maximum mean annual PM_{10} concentration was $24.5 \mu\text{g}/\text{m}^3$. From 1995 to 1998, the maximum 24-hour PM_{10} concentration was $145 \mu\text{g}/\text{m}^3$.

The primary source of CO is incomplete fossil fuel combustion. CO concentrations have the potential to be high in urbanized areas where automobile traffic is heavy and cars frequently idle at stoplights. The Boise area is the only CO nonattainment area in the state. No violations of the 1-hour CO NAAQS have occurred in Idaho since 1987. The 8-hour CO NAAQS in Boise was exceeded once in 1991 on January 11. There have been no exceedances since that date (IDEQ 2001).

3.1.2 Geology

Cotterel Mountain is a long, low ridge with a relatively steep face or escarpment on the east side and a long, gentle slope on the west side. Elevation range from 4,600 feet at the north end of the mountain to 7,200 feet at the summit. Cotterel Mountain comprises part of the Malta Range, which flanks the west side of the Raft River Valley. The Raft River Valley is a north-trending intermontane tectonic basin approximately 37 miles long and approximately 15 miles wide with an average valley floor elevation of about 4,600 feet. The valley opens northward toward the broad Snake River Plain. The Raft River basin lies in the northeast part of the Basin and Range province and is within an area of relatively high heat flow known as the Cordilleran thermotectonic anomaly (Williams *et al.* 1982).

The eastern side of Cotterel Mountain is flanked by the Raft River detachment fault, which is an east-dipping low-angle normal fault. North-striking normal faults are numerous and conspicuous in the Cotterel Mountain vicinity, implying that the area is block faulted. This is common for late Cenozoic tectonic activity in the Basin and Range province, which has been recognized as a region dominated by extensional tectonics (Williams *et al.* 1982).

The Proposed Project area generally consists of Pliocene and Upper Miocene volcanic rocks, rhyolite flows, tuffs, and ignimbrites (Link 2002). Specifically, the northern end of Cotterel Mountain is composed of lower and upper successions of rhyolite flows, and a middle unit of varied lithology with a total maximum thickness of approximately 3,900 feet. The lower and upper rhyolite flows are very

similar and consist of mainly dark gray to black, glassy porphyritic rhyolite that weathers to dark reddish brown. The rhyolite rock is commonly flow banded, and has well-developed columnar jointing that is square in cross section. The southern part of Cotterel Mountain is volcanic explosion breccia that was produced by rhyolite flowing into a body of water. The breccia is overlain by two thin, vitric, rhyolite ash-flow tuffs that were erupted from sources to the east. The tuffs are overlain by approximately ten feet of white to gray tuffaceous sandstone to siltstone (Williams *et al.* 1982).

The basalt of the northern end of Cotterel Mountain is the oldest basalt in the Raft River region and consists of two flows. The basalt rock is gray to light gray with a reddish oxidation tint. It contains olivine and plagioclase clasts in a dense groundmass of fine-grained plagioclase, olivine, pyroxene, opaque minerals, and glass (Williams *et al.* 1982).

GeoEngineers (2004) performed a limited subsurface geotechnical investigation as a basis for developing preliminary recommendations for foundation design of the wind turbine towers. Their investigation included drilling eight air-track holes and four rock core holes. The rock core holes were drilled to a depth of about 40 feet; three holes were drilled in rhyolite, and one hole was drilled in basalt. GeoEngineers described the core, which included assigning a rock quality designation (RQD). RQD is a modified core recovery index defined as the total length of unfractured core greater than 100 millimeters in length, divided by the total length of the core run. The resulting value is presented in the form of a percentage (Deere and Deere 1988). A high RQD value generally means that the rock has few natural discontinuities (fractures, faults, etc). The RQD percentage is typically translated into the following descriptors of rock quality (Deere and Deere 1988):

- 0 – 25% RQD = Very Poor rock quality;
- 25 – 50% RQD = Poor rock quality;
- 50 – 75% RQD = Fair rock quality;
- 75 – 90% RQD = Good rock quality; and
- 90 – 100% RQD = Excellent rock quality.

The basalt exhibits good rock quality. The rhyolite exhibits very poor to poor rock quality.

Mineral Resources

The Cotterel Mountain area has known mineral resources (Griggs 2004). There is a platy rhyolite locally referred to as “desert antique” in the southern reaches of the Proposed Project area. Due to the difficulty of access, there has been little or no interest in mineral sales. The Nibbs Creek Community Pit is within one mile of the Proposed Project, and there has been one mineral material sale from that site since April 2003 (Griggs 2004). Within the Proposed Project area, there are:

- No known oil and gas discoveries;
- No active coal leases;
- No coal bed methane producing resources;
- No locatable minerals are known to exist in sufficient quantities for economical recovery.

Geologic Hazards

The potential for seismic activity within the Proposed Project area is moderate, according to the Uniform Building Code Seismic Code Map (Idaho Geologic Survey 2003). There are landslides within the proposed ROW boundary, located on the east side of the escarpment (Griggs 2004).

3.1.3 Soils

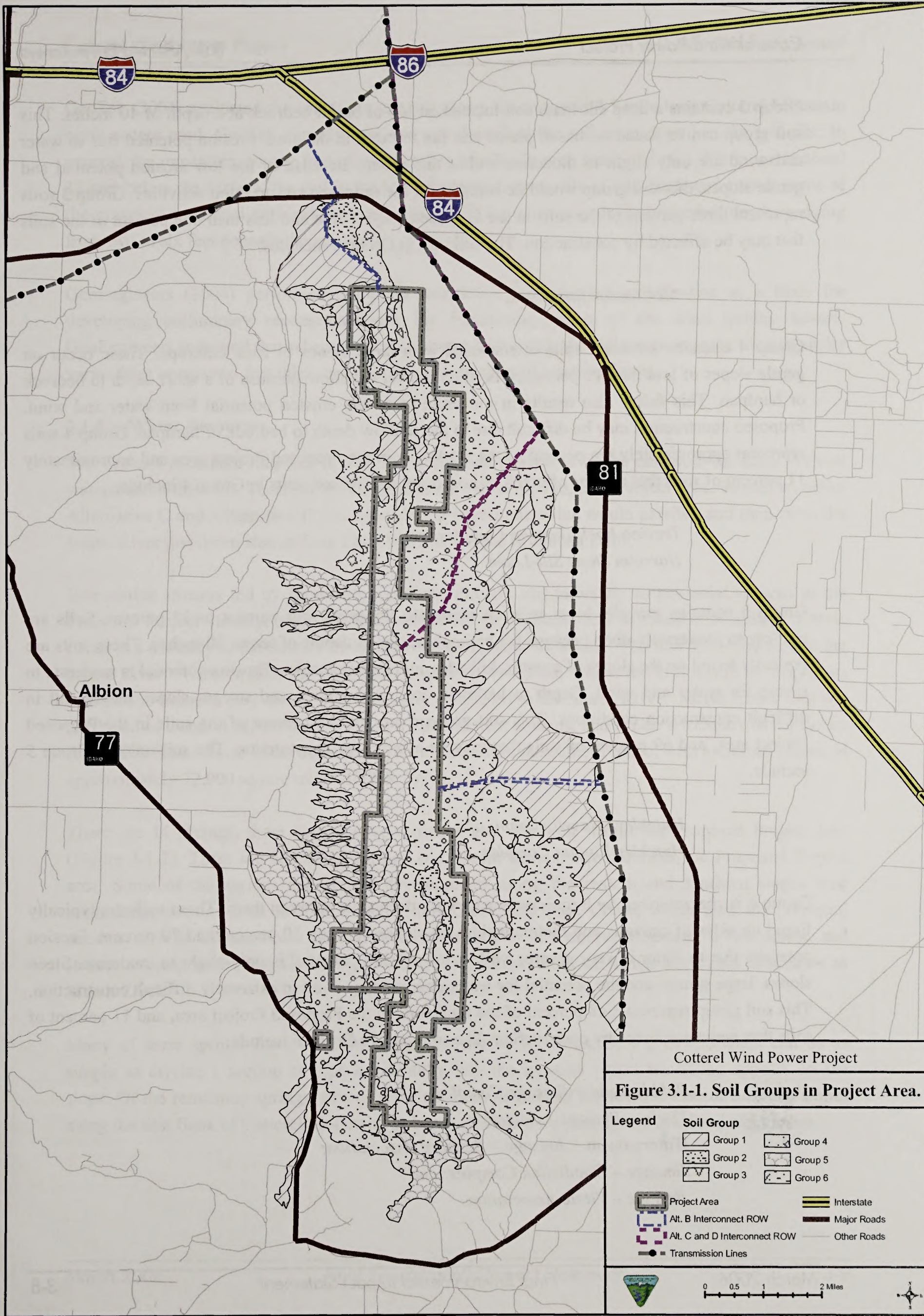
Soils in the Proposed Project area were differentiated and mapped by the NRCS into 17 soil types (USDA, NRCS 1986). These 17 soil types all have the following general characteristics. They are located at high elevation, have low water-carrying capacity, have a potential for erosion by wind and water, and have minimal to moderate productivity capabilities as rangeland. For the Proposed Project area, we separated the 17 soil types into six soil groups; based on characteristics such as slope, soil depth, depth to bedrock or hardpan, and susceptibility to erosion. Each soil group contains from one to five soil types. Figure 3.1-1 shows the locations of these six major soil groups. The following descriptions for the soil groups are compilations of the individual soil types described by the NRCS (USDA, NRCS 1986).

Group 1 consists of deep silt-loam soils on slopes of less than 12 percent. These soils occur predominantly on hillsides, in alluvial fans and on fan terraces. Bedrock occurs at a depth of greater than 60 inches. Water capacities of these soils are higher relative to other soils in the Proposed Project area. This may result in complications for construction due to severe frost action. Erosion potential from water runoff is moderate to very severe within this group, while the potential for wind-caused erosion is only moderate. Soils in Group 1 represent approximately 22 percent of the total soils in the Proposed Project area and about eight percent of the soils that may be affected by construction. Soil units in Group 1 include:

Rexburg Silt-Loam;
Watercanyon Silt-Loam;
Hades Gravelly Loam;
Heglar Silt-Loam; and
Kancan Gravelly Silt-Loam.

Group 2 consists of moderately deep loam to silt-loam soils on slopes less than eight percent. These soils are typically found on fan terraces or hillsides. Bedrock occurs at a depth of greater than 60 inches. A hardpan generally exists at a depth of 20 inches to 40 inches in Group 2 soils. This hardpan may impact any proposed construction activities in these soils. Erosion potential due to water run-off is only slight to moderate within this group, but erosion potential due to wind is moderate to severe. Soils in Group 2 represent about one percent of the total soils in the Proposed Project area and about one percent of the soils that may be affected by construction. Soil units in Group 2 include:

Rafriver loam; and
Taunton Silt Loam.



Cotterel Wind Power Project

Figure 3.1-1. Soil Groups in Project Area.

- Legend**
- | | |
|-------------------------------|-------------|
| Group 1 | Group 4 |
| Group 2 | Group 5 |
| Group 3 | Group 6 |
| Project Area | Interstate |
| Alt. B Interconnect ROW | Major Roads |
| Alt. C and D Interconnect ROW | Other Roads |
| Transmission Lines | |



0 0.5 1 2 Miles

Group 3 contains a deep silt-loam soil located on top of basalt bedrock at a depth of 40 inches. This soil group can be found on basalt plains and fan terraces in the area. Erosion potential due to water and wind are only slight to moderate within this group. Because of the low erosion potential and gentle slopes, this soil group would be suitable for the proposed construction activities. Group 3 soils represent three percent of the soils in the Proposed Project area and less than one percent of the soils that may be affected by construction. The soil unit in Group 3 includes:

McClendon Silt-Loam.

Group 4 contains silt-loam soils interspersed with large stones or rock outcrops. These occur on gentle slopes of less than 12 percent. The soils are very shallow because of a short depth to bedrock or hardpan. This factor also results in moderate to severe erosion potential from water and wind. Proposed construction may be difficult due to the shallow depth to bedrock or hardpan. Group 4 soils represent approximately ten percent of the total soils in the Proposed Project area and approximately 11 percent of soils that may be affected by construction. The soil units in Group 4 include:

*Trevino Rock Outcrop Complex; and
Harroun Stony Silt-Loam.*

Group 5 contains gravelly loam soils on moderate slopes of four percent to 35 percent. Soils are shallow to moderately deep because the bedrock occurs at depths of ten to 20 inches. These soils are typically found on the slopes of cuestras, hillsides, and mountainsides. Erosion potential is moderate to severe for water and wind. Depth to bedrock, erosion potential, and steeper slopes may result in difficult construction conditions. This soil group represents 16 percent of the soils in the Proposed Project area, and 69 percent of soils that may be affected by construction. The soil units in Group 5 include:

*Hutchley Gravelly Loam; and
Hutchley Vipoint Complex.*

Group 6 is characterized by large stones with very deep soils between them. These soils are typically found on sides of canyons and mountainsides on slopes between 30 percent and 70 percent. Erosion potential due to water is very severe, while wind erosion potential is only slight to moderate. Steep slopes, large stones, and the potential for water erosion may result in extremely difficult construction. This soil group represents 48 percent of the total soils in the Proposed Project area, and 11 percent of soils that may be affected by construction. The soil units in Group 6 include:

*Rubble Land – Jimsage Complex;
Vitale – Jimsage Association
Watercanyon – Jimsage – Rexburg Association;
Jimsage – Doodlelink Complex; and
Jimsage – Vitale Association.*

GeoTek (2004) evaluated the soil at ten test pits along the proposed 4.5 mile-long Cotterel Mountain north access road. GeoTek visually assessed and described the soil encountered in the test pits. In general, the upper zero to one foot of soil consists of silt, silt with sand, and clay. From one to about 12 feet below the surface, the soil in the test pits consists primarily of silt, sand, and gravel; some of the gravel is cemented with calcium carbonate, forming a hardpan layer located at depths ranging from two to six feet beneath the surface.

GeoEngineers (2004) performed a limited subsurface geotechnical investigation as a basis for developing preliminary recommendations for foundation design of the wind turbine towers. GeoEngineers indicated that where the towers are to be located, the soil cover over the rock typically varies from one to two feet thick, and in many places, the soil is non-existent.

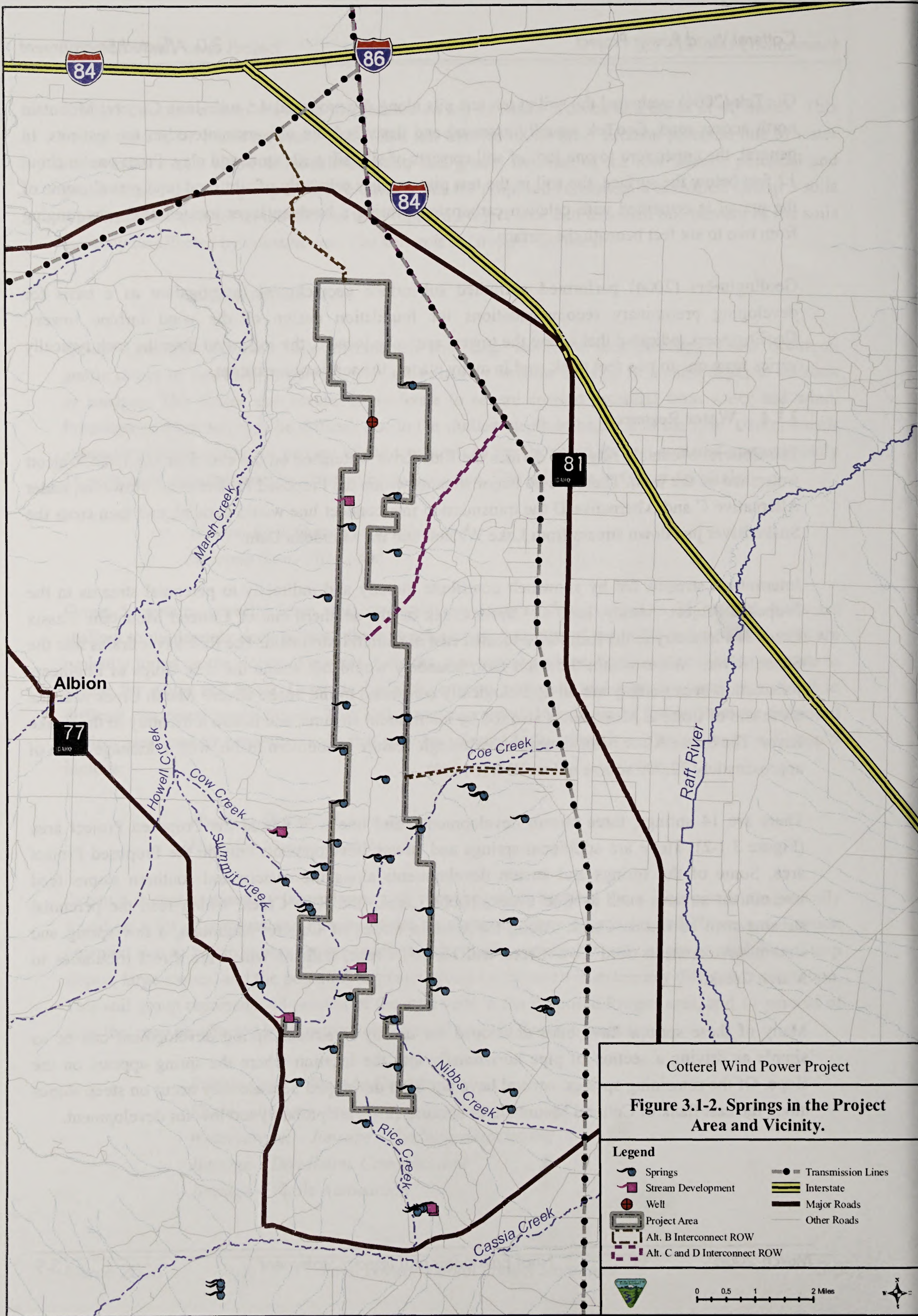
3.1.4 Water Resources

The Cotterel Mountain ridgeline divides the Raft River watershed on the east from the Lake Walcott watershed on the west. There are no major streams within the Proposed Project area. However, under Alternative C and Alternative D the transmission interconnect line would parallel, and then cross the Snake River just down stream from Lake Walcott and the Minidoka Dam.

Intermittent streams fed by snowmelt contribute directly and indirectly to perennial streams in the Proposed Project vicinity, such as Cassia Creek on the southern end of Cotterel Mountain. Cassia Creek is a tributary to the Raft River located east of Cotterel Mountain. The Raft River drains into the Snake River. Water within the wind farm boundary would fall within the U.S. Corps of Engineers jurisdiction because they are all hydrologically connected to the Snake River. Marsh Creek near the north end of Cotterel Mountain is also fed by intermittent streams, and is also a tributary to the Snake River. The Snake River is the dominant hydrologic feature in southern Idaho, with a drainage basin of approximately 72,000 square miles (IDWR 1999).

There are 14 springs, three stream developments, and one well within the Proposed Project area (Figure 3.1-2). There are additional springs and stream developments outside the Proposed Project area. Some of the springs and stream developments along the eastern and southern slopes feed intermittent streams such as Coe Creek, Nibbs Creek, and Rice Creek, which feed the perennial streams such as Cassia Creek. Along the western slopes of Cotterel Mountain, a few spring and stream developments feed Cow Creek and Howell Creek, both of which are direct tributaries to Marsh Creek.

Many of these springs have been developed for use by livestock. Spring development can be as simple as driving a section of pipe horizontally into the location where the spring appears on the slope. Of the remaining springs, several have not been developed because they occur on steep slopes along the east flank of Cotterel Mountain, or because flows are probably too low for development.



Cotterel Wind Power Project

Figure 3.1-2. Springs in the Project Area and Vicinity.

Legend

- | | |
|-------------------------------|--------------------|
| Springs | Transmission Lines |
| Stream Development | Interstate |
| Well | Major Roads |
| Project Area | Other Roads |
| Alt. B Interconnect ROW | |
| Alt. C and D Interconnect ROW | |



0 0.5 1 2 Miles



The occurrence of springs is closely related to the geology of an area. If an impervious layer of rock, such as a clay deposit, underlies a layer of water-saturated soil or rock, then a line of springs will tend to appear on a slope where the clay layer outcrops. Igneous rocks are also impervious to water, yet they are often extensively fractured, and springs commonly appear where water-saturated fractures come to the surface, or where the fractures intersect underlying impervious rock. Springs are also common along faults, because the fault plane may act as a conduit for groundwater to reach the surface, or the fault plane may be impervious, and force the water to reach the surface.

Under section 303(d) of the Clean Water Act, states, territories, and Tribes are required to develop lists of impaired waters that do not meet water quality standards. Cassia Creek, Marsh Creek, and the Raft River are listed by the State of Idaho as impaired or threatened waters under the 303d designation (IDEQ 2003). Table 3.1-2 summarizes the status of the 303d designation for each stream segment.

Table 3.1-2. Impaired (303d designation) Waters Near the Proposed Project Area (IDEQ 2003).

Cassia Creek (Headwaters to Connor Creek)	De-listed from 303(d) list in 1998.
Cassia Creek (Connor Creek to Raft River)	Listed in 1996 for concerns over habitat alteration and sediment.
Raft River (Malta to Snake River)	Listed in 1996 for concerns over pathogens (replaced by “bacteria” in the 1998 list), dissolved oxygen, channel flow alteration, ammonia, nutrient loading, and sediment.
Marsh Creek	Listed in 1998 for reasons not stated.

The State of Idaho has designated beneficial uses for Cassia Creek, Marsh Creek and the Raft River. Each of these perennial streams should provide water quality appropriate for aesthetics, irrigation and livestock, industrial water supply, and wildlife habitat. In addition, the Raft River should also provide water quality suitable for primary contact recreation (i.e. swimming), the protection and maintenance of populations of cold-water species, and habitat for the active self-propagation of salmonid fish species.

Groundwater within the Proposed Project vicinity occurs at depths ranging from 800 to 2,500 feet below ground surface within the unconfined Raft River Valley aquifer. Regional groundwater flows to the northwest towards the Snake River. The western slopes of Cotterel Mountain are within a Critical Groundwater Management Area designated by the Idaho State Department of Water Resources (IDWR). This designation indicates that all or part of the groundwater basin does not have sufficient groundwater to provide a reasonably safe supply for irrigation or other uses at the current or projected rates of withdrawal (IDAPA 1993; IDWR 1999). There are no public drinking water wells within the Proposed Project area boundary (Risley 2003).

3.1.5 Noise

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding roughly to the threshold of pain.

Human response to noise is subjective and can vary greatly from person to person. Factors that can influence individual response include: intensity, frequency, and time pattern of the noise; the amount of background noise present prior to the intruding noise; and the nature of work or human activity that is exposed to the noise. The adverse effects of noise include interference with concentration, communication, and sleep. At the highest levels, noise can induce hearing damage.

There are several methods of characterizing sound. Environmental noise is usually measured in A-weighted decibels (dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive for typical environmentally occurring sounds. Some representative noise sources and their corresponding noise levels (in dBA) are shown in Table 3.1-3 (USDOT-FHWA 1998). The noise levels presented in Table 3.1-3 are representative of measured noise at a given instant in time; however, they rarely persist consistently over a long period of time.

Table 3.1-3. Representative Noise Sources and Corresponding Noise Levels.

Noise Level (dBA)	Common Indoor Noise Levels	Common Outdoor Noise Levels
100-110	Above 100 dBA – rock band	Jet flyover at 1,000 feet
90-100	Inside subway train (New York)	Gas lawn mower at 3 feet
80-90	Food blender at 3 feet, garbage disposal at 3 feet	Diesel truck at 50 feet, noisy urban daytime
70-80	Shouting at 3 feet, vacuum cleaner at 10 feet	Gas lawn mower at 100 feet
60-70		Commercial area, heavy traffic at 300 feet
50-60	Large business office	Quiet urban daytime setting
40-50	Small theater	Quiet urban nighttime setting
30-40	Conference room (background), library	Quiet suburban nighttime setting
20-30	Concert hall (background)	Quiet rural nighttime setting
10-20	Broadcast and recording studio	
0-10	Threshold of hearing	

Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies. Local regulation of noise involves implementation of general plan policies and noise ordinance standards.

At the federal and state level, there are no regulations that would apply to noise from commercial wind turbine generator operation. In a Wind Energy Programmatic EIS Frequently Asked Question report (USDI, BLM 2004), the BLM stated that much of the wind turbine noise is masked by the sound of the wind itself, and that turbines only operate when the wind is blowing. Noise from wind turbines has diminished as the technology of turbines has improved. Newer turbine blade design results in wind energy being converted into greater rotational torque with less acoustic noise versus early-model turbines. Under most conditions, modern wind turbines are quiet (USDI, BLM 2004b).

The relatively remote Proposed Project area has no industrial noise sources. Existing background noise in the Proposed Project area is expected to be similar to the EPA "farm in valley" noise category, which is about 32 to 39 dBA. Existing human generated noise in the Proposed Project area vicinity is attributable to: recreational users such as off-highway vehicles (OHV) and snowmobile riders; occasional low flying aircraft; agricultural equipment; and traffic on area roads such as State Highway (SH)-77, SH-81, and Interstate 84 (I-84).

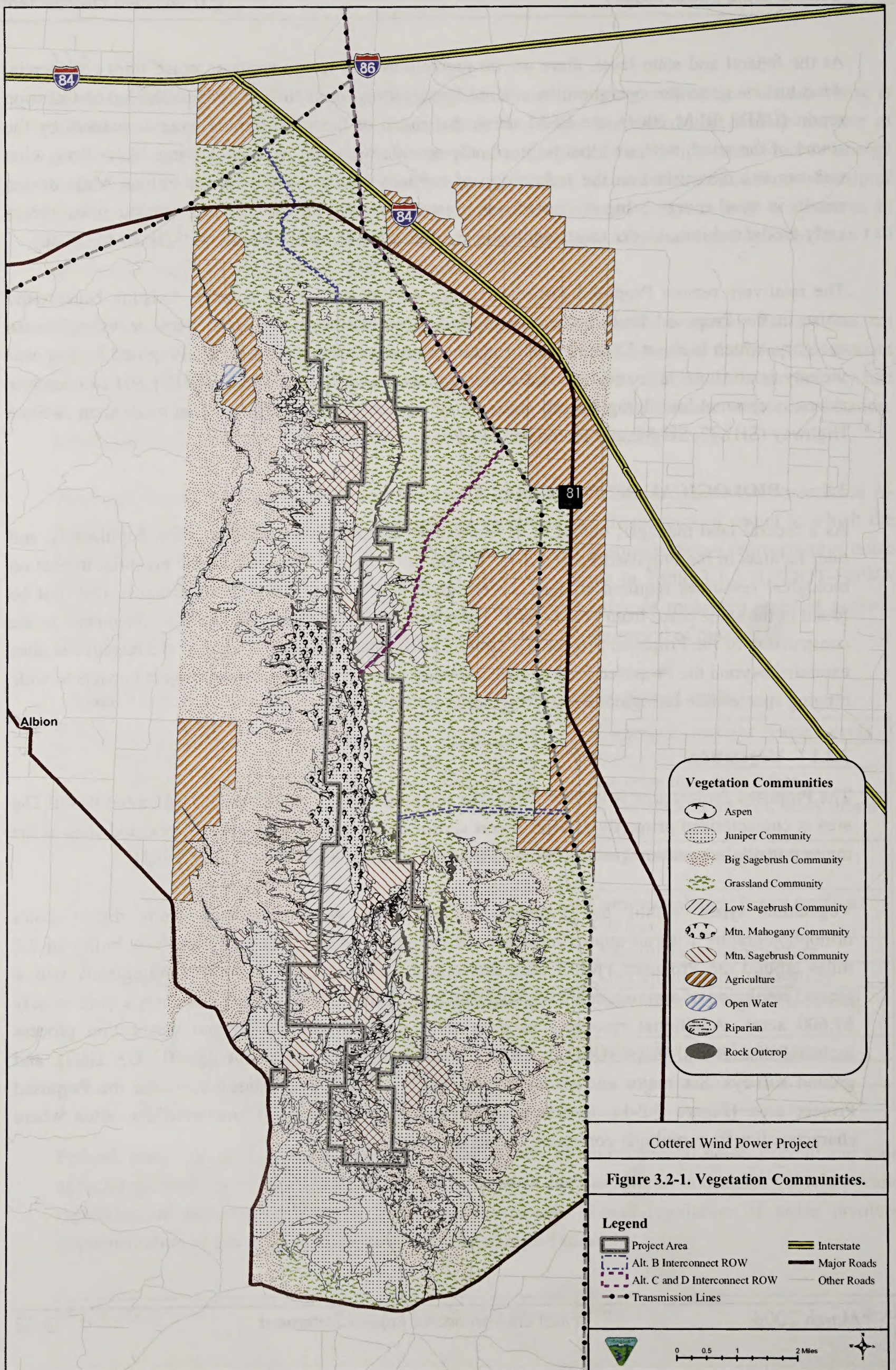
3.2 BIOLOGICAL RESOURCES

As a federal land manager, the BLM is responsible for conserving wildlife, plant populations, and their habitats in the Proposed Project area. Within the Proposed Project area, the potential impact on biological resources required studies of vegetation and wildlife. Biological resources may not be found in the same place from year to year. Therefore, inventories needed to be completed prior to the construction of the Proposed Project. To provide an adequate inventory, some of the resource studies extended beyond the Proposed Project area boundary to better assess potential project impacts to wide ranging species like ferruginous hawk, sage-grouse, and mule deer.

3.2.1 Vegetation

The Proposed Project area is located within the southeast portion of the Interior Columbia Basin. The area is characterized primarily as semi-desert shrub-steppe with sagebrush and woodland sites as the major potential vegetation groups (USDA, FS 1994; USDA, NRCS 1994; USGS 2003).

Vegetation types within the Proposed Project area were delineated from digital color orthophotography with an approximate ground resolution of one foot (0.3 meter). A buffer of 2.5 miles around the Proposed Project area was mapped using digital color orthophotography with a ground resolution of approximately two feet (0.6 meter). The buffer area delineation is approximately 67,600 acres. Additional resources used in the vegetation delineation and verification process included district soil maps (USDA, NRCS 1994), sagebrush assessment data (USGS 2003), and ground surveys. Six major and six minor community types were delineated within the Proposed Project area (Figure 3.2-1). Overlapping polygons in Figure 3.2-1 are transition sites where characteristics from multiple community types are represented.



Community Types

Twelve general community types were located within the Proposed Project area and the associated buffer (Figure 3.2-1). Within the Proposed Project area nine community types were identified including: low sagebrush, mountain mahogany, juniper, juniper/mountain mahogany mix, mountain sagebrush, low/mountain sagebrush mix, grasslands, big sagebrush, aspen, rock outcrops, and riparian communities (Tables 3.2-1, 3.2-2 and 3.2-3). Because of the complexity and distribution of the overlapping community type ranges of low/mountain sagebrush mix, they were not able to be visually displayed on the vegetation map for the Proposed Project area.

Table 3.2-1. Vegetative Components within Each Community Type.

Community Type	Tall Woody Shrubs	Low Woody Shrubs	Forbs	Grasses and Grass Like Species
Low sagebrush	Not Present (NP)	low sage, and rabbitbrush	phlox, onions, buckwheat, agoseris, death camas, and cactus	Sandberg's bluegrass, bluebunch wheatgrass, and squirreltail
Big sagebrush	NP	Great Basin and Wyoming big sagebrush, and rabbitbrush	arrowleaf balsamroot, yarrow, buckwheat, stone seed, agoseris, lupine, phlox, mullein, common dandelion	bluebunch wheatgrass, Sandberg's bluegrass, bulbous bluegrass, needle and thread grass, great basin wildrye, crested wheatgrass, cheatgrass, and Indian rice grass
Mountain sagebrush	NP	mountain sagebrush, and rabbit brush	arrowleaf balsamroot, phlox, buckwheats, lupines, penstemon, agoseris, depinium yarrow, mertensia	bluebunch wheatgrass, Sandberg's bluegrass, bulbous bluegrass, great basin wild rye, needle and thread, and squirrel tail
Juniper	juniper	Wyoming Big sagebrush, mountain big sagebrush, bitter brush and rabbitbrush	buckwheat, and cactus	Sandberg's bluegrass and bluebunch wheatgrass
Mountain mahogany	mountain mahogany	mountain sagebrush, rabbit brush, bitter brush, and snowberry	buckwheat, yarrow, and cactus	bluebunch wheatgrass and Sandberg's bluegrass
Grasslands		rabbitbrush, big and mountain sagebrush	phlox, onions, agoseris, penstemon, buckwheat, stone seed, death camas, and cactus	Intermediate and desert wheatgrass, bulbous bluegrass, cheatgrass, Sandberg's bluegrass, bluebunch wheatgrass, Russian wild rye, Great Basin wild rye, annual fescue, and Indian rice grass
Aspen	service berry, Rocky Mountain Juniper, chokecherry, snowberry, currant (<i>Ribes</i> spp.)	mountain big sagebrush, rabbitbrush	yarrow, arrowleaf balsamroot, lupine, stone seed, lily, violet, waterleaf	

Table 3.2-2. Acreage of Each Community Type Within Vegetation Survey Area.

Vegetative Community	Total Acres	Percent of Total Area
Low sagebrush	2,376	3.1%
Big sagebrush	17,582	22.6%
Mountain sagebrush	2,079	2.7%
Low/mountain sage mix	356	0.5%
Juniper	11,449	14.7%
Mountain mahogany	265	0.3%
Juniper/Mahogany mix	1,805	2.3%
Grasslands	25,521	32.8%
Aspen	42	0.1%
Agricultural land	14,998	19.3%
Rock outcrop	469	0.6%
Riparian	333	0.4%
Open water	50	0.1%
Existing roads*	395	0.5%
Total Area:	77,720 acres	100%

Total area calculation is +/- 2%.

*Not included as a community type.

Table 3.2-3. Acres of Each Community Type Within the Proposed Project Area.

Vegetative Community	Acres within Proposed Project Area	Percent of Proposed Project Area
Low sagebrush	1,435	12.8%
Big sagebrush	1,522	13.6%
Mountain sagebrush	1,527	13.7%
Low/Mountain sage mix	84	0.8%
Juniper	1,267	11.3%
Mountain mahogany	255	2.3%
Juniper/Mahogany mix	1,127	10.1%
Grasslands	3,465	31.0%
Aspen	41	0.4%
Agricultural land	0	0.0%
Rock outcrop	268	2.4%
Riparian	20	0.2%
Open water	0	0.0%
Existing roads*	158	1.4%
Total Area:	**11,169 acres	100%

*Not included as a community type.

**Total area calculation is +/- 1%. Actual Proposed Project area is approximately 11,500 acres.

Low Sage

The low sage community type is principally shrub land with a dominant low shrub layer. It occupies approximately 2,376 acres (3.1%) of the total area and 1,435 acres (12.8%) of the Proposed Project area. This community type normally occurs on hilltops and ridges and consists of well-drained shallow soils that are severely susceptible to water and wind erosion.

The low sage community is comprised primarily of woody shrubs, with some forbs, grasses, moss, and lichens. The vegetation component of this community makes up approximately 55 percent of the ground cover (Tharp 2004), with the rest consisting of litter, cryptogammic soils, rock and bare ground. The total vegetation cover of this community type can vary significantly depending on the amount of rock and soil depth. It consists of: low, woody shrubs consisting of low sage (*Artemisia arbuscula*), and rabbitbrush (*Chrysothamnus spp.*); grasses, including Sandberg bluegrass (*Poa secunda*), bluebunch wheatgrass (*Agropyron spicatum*), and squirreltail (*Sitanion hystrix*); forbs, including hoods phlox (*Phlox hoodii*), onion (*Allium spp.*), buckwheat (*Eriogonum spp.*), Mariposa lily (*Calochortus spp.*), and cactus (*Opuntia spp.* and *Pediocactus simpsonii*); and moss and lichens.

Wyoming/Great Basin Big Sage

The big sagebrush community type is normally found in the lowest elevation of the Proposed Project area and is principally shrubland with a dominant layer of low shrubs and a significant graminoid/herb understory. This community type occupies approximately 17,582 acres (22.6%) of the total area and 1,522 acres (13.6%) of the Proposed Project area. It consists of well-drained, very deep soils that are severely susceptible to water erosion and only moderately susceptible to wind erosion.

The Wyoming/Great Basin big sage complex includes low shrubs, forbs, grasses, moss, and lichens. Great Basin big sage generally occupies drainage bottoms and deeper soils within the Wyoming sagebrush zone. The vegetation component comprises approximately 55 to 60 percent (Tharp 2004) of the total ground cover, with litter, bare ground, and rocks comprising the remainder. The vegetation cover of this community type consists of: low shrubs such as Great Basin (*Artemisia tridentata spp. tridentata*) and Wyoming big sagebrush (*Artemisia tridentata ssp. Wyomingensis*) and rabbitbrush; grasses, including Bluebunch wheatgrass, Sandberg bluegrass, bulbous bluegrass, needle and thread grass (*Stipa thurberiana*), Indian rice grass (*Oryzopsis hymenoides*), Great Basin wild rye (*Elymus scinereus*), cheatgrass and crested wheatgrass (*Agropyron desertorum*); forbs consisting of arrowleaf balsamroot, yarrow, buckwheat, lupine, and phlox; and moss, and lichens.

Mountain Big Sage

The mountain big sagebrush community type is principally shrub land with a dominant layer of low shrubs and a significant graminoid understory. It is normally found at elevations above Wyoming and Great Basin sagebrush habitat and occupies approximately 2,079 acres (2.7%) of the total area and 1,527 acres (13.7%) of the Proposed Project area. It consists of well-drained, deep soils that are severely susceptible to water erosion, but only slightly susceptible to wind erosion due to increased vegetative cover.

The mountain big sage community includes woody shrubs, forbs, grasses, moss and lichens. The vegetation component of the community comprises approximately 60 to 70 percent of the ground cover (Tharp 2004), with the remainder consisting of litter, open-faced rock, and bare ground. The total vegetation cover of this community type consists of: short, woody shrubs including mountain sagebrush, bitterbrush, and rabbitbrush; grasses consisting of bluebunch wheatgrass, Sandberg bluegrass, bulbous bluegrass (*Poa bulbosa*), Great Basin wild rye, and squirrel tail; forbs such as phlox, buckwheat, onions, lupine (*Lupinus spp.*), and arrowleaf balsamroot (*Balsamorhiza hookeri*); and moss and lichens are present as well.

Low Sagebrush/Mountain Sagebrush Mix

The low sagebrush/mountain sagebrush mix community occupies approximately 356 acres (0.5%) of the total area and 84 acres (0.8%) of the Proposed Project area. This type is characterized by an irregular mix of low sagebrush and mountain community types.

Juniper

The juniper (*Juniperous Osteosperma*) community type is generally a low precipitation woodland with varying amounts of understory. It occupies approximately 11,449 acres (14.7%) of the total area and 1,267 acres (11.3%) of the Proposed Project area. It consists of well-drained, deep soils that are severely susceptible to water erosion, but only slightly susceptible to wind erosion.

The juniper community includes tall and short woody shrubs, forbs, grasses, moss, and lichens, comprises approximately 65 percent of the ground cover, with the rest consisting primarily of bare ground and some open-face rock. The total vegetation cover of this community type consists of: juniper and mountain mahogany; low shrubs including big sagebrush, mountain sagebrush, bitterbrush, and rabbitbrush; grasses that consist of Sandberg bluegrass and bluebunch wheatgrass; forbs such as buckwheat and cactus; and moss and lichens are present as well.

Mountain Mahogany

The mountain mahogany community type is low-precipitation woodland generally found in environments similar to Utah Juniper (USGS 2003; USDA, FS 1994). It occupies approximately 265 acres (0.3%) of the total area and 255 acres (2.3%) of the Proposed Project area. It typically occurs on hilltops and east-facing slopes with shallow soils with little understory.

The mountain mahogany community includes woody shrubs, forbs, grasses, moss and lichens. It comprises approximately 50 to 65 percent of the ground cover (Tharp 2004), with the rest consisting of litter, bare ground, and some open-faced rock. The total vegetation cover of this community type consists of: mountain mahogany (*Cercocarpus ledifolius*); low, woody shrubs, including mountain sagebrush (*Artemisia tridentata spp. Vaseyana*), rabbitbrush, and bitterbrush; grasses consisting of Bluebunch wheatgrass and Sandberg bluegrass; forbs such as buckwheat, yarrow (*Achillea millefolium*), and cactus; and moss, and lichens.

Juniper/Mountain Mahogany Mix

The juniper/mountain mahogany mix community type occupies approximately 1,805 acres (2.3%) of the total area and 1,127 acres (10.1%) of the Proposed Project area.

Grasslands

The grassland community type is composed primarily of native and seeded communities that were historically big sagebrush, low sagebrush, and juniper communities that burned primarily due to wildfire. This type contains some of the most disturbed, and support primarily localized concentration of annual exotics. It occupies approximately 25,521 acres (32.8%) of the total area and 3,465 acres (31.0%) of the Proposed Project area. It consists of soil types ranging from well-drained, very deep soils that are only moderately susceptible to water and wind erosion to well-drained, shallow soils that are very susceptible to water and wind erosion (USDA, NRCS 1994).

The grassland community includes tall and short woody shrubs, forbs, grasses, moss, and lichens that comprise approximately 30 to 60 percent of the ground cover, with the rest consisting of litter, bare ground and rock. The vegetation cover of this community type consists primarily of grasses including Intermediate (*Agropyron intermedia*) and desert wheatgrass, bulbous bluegrass, cheatgrass (*Bromus tectorum*), Sandberg bluegrass, bluebunch wheatgrass, Russian wild rye (*Elymus junceus*), Great Basin wild rye, six weeks fescue (*Vulpia bromoides*), Indian rice grass, bulbous bluegrass, needle and thread grass, crested wheatgrass, and Junegrass (*Koeleria cristata*). Scattered among the grass species are sparse patches of low, woody shrubs such as rabbitbrush, big sage, and mountain sagebrush, as well as forbs such as phlox, onion, agosoris (*Agosoris spp.*), penstemon (*Penstemon spp.*), buckwheat, stone seed (*Lithospermum ruderales*), western wheatgrass, and cactus, moss and lichens.

Aspen

The aspen community type is generally found at mid elevations on east-facing slopes. It is principally occupied by a dominant layer of tall to medium deciduous shrubs and a significant graminoid/herb understory. This community type occupies approximately 42 acres (0.1%) of the total area, and 41 acres (0.4%) of the Proposed Project area. It typically occurs in snow catch pockets or near springs with very deep, highly erodible soils (USGS 2003; USDA, FS 1994).

The aspen community includes tall trees, woody shrubs, forbs, and some moss and lichens, which comprises approximately 85 percent of the ground cover. The rest of the community consists of litter, bare ground, and some open-faced rock. The total vegetation cover of this community type consists of: aspen trees and service berry (*Amelanchier alnifolia*); Rocky Mountain Juniper (*Juniperus scopulorum*); chokecherry (*Prunus virginiana*); snowberry (*Symphoricarpos albu*); currant (*Ribes spp.*); low, woody shrubs, including mountain big sagebrush and rabbitbrush; and forbs such as yarrow, arrowleaf balsamroot, lupine, stone seed, lily, violet, and waterleaf.

Minor Community Types

There are a variety of other community types that make up a very small portion of the Proposed Project area but are key functional components including: barren rock outcrops make up 469 acres (0.6%) of the total area and 268 acres (2.4%) of the Proposed Project area; open waters make up 50 acres (0.1%) of the total area and zero acres of the Proposed Project area; riparian zones make up 333 acres (0.4%) of the total area and 20 acres (0.2%) of the Proposed Project area; and agricultural lands make up 14,998 acres (19.3%) of the total area and zero acres of the Proposed Project area (Tables 3.2-2 and 3.2-3). These minor community types make up approximately 15,850 (20.4%) of the total area and 288 acres (2.6%) of the Proposed Project area. They occur throughout the area and are key process and structural components of the Cotterel Mountain area ecosystem, as well as habitat and forage sites for wildlife, birds, cattle, and big game. However, based on the limited size and low probability of impact from the Proposed Project, these community types have not been described in detail. Non-vegetated community influences include: rock outcrop, disturbed sites, and open water.

Vegetation Along Transmission Interconnect Lines

Under Alternative B, the proposed transmission interconnect lines would primarily cross areas of grassland, agricultural and big sagebrush communities with a small portion of low sagebrush community crossed as well. The ridgeline of Cotterel Mountain where the north substation would be sited is dominated by low sage with little or no understory (See Table 3.2-1). Vegetation in the vicinity of the southern substation is dominated by grassland with a scattering of junipers and some sagebrush.

Under Alternative C and D the proposed transmission interconnect line would cross the eastern and northern slopes of the mountain down to the Raft River Valley, and then head north crossing the Snake River just below Lake Walcott and Minidoka Dam. This area is generally composed of grasslands and agricultural fields. Big sagebrush communities, with an understory of native grass and forbs, historically dominated these areas. However, over time, some of these areas have been altered by repeated wildfires, overuse, and development. The grassland communities along the route are generally dominated by invasive or seeded non-native species, with some residual natives (See Table 3.2-1). The remaining area crossed by the proposed transmission line would be classified as agricultural. These areas typically consist of irrigated and non-irrigated farmland and pasture lands and are predominantly under private ownership.

The riparian zone of the Snake River where it is crossed by the transmission interconnect line is dominated by Russian olive (*Elaeagnus angustifolia*), with a scattering of cottonwoods. Side channels of the Snake River in this area support stands of cattails (*Typha latifolia*) and a scattering of willow species (*Salix* spp.). North of the Snake River, vegetation is dominated by grassland with residual Wyoming big sagebrush and rabbit brush intermixed.

Threatened or Endangered Plant Species

The only federally listed plant species in the area is Christ's paintbrush (*Castilleja christii*; federal candidate). This species is known only from the type location at Mount Harrison, approximately 12

miles west of the Proposed Project area, at the northern end of the Albion Mountains in Cassia County, Idaho. It occurs primarily on gentle, northerly-facing slopes between 8,600 and 9,200 feet and is inversely related to the density of sagebrush. It generally occurs only in openings in the sagebrush and within the nearly shrubless swales of the patterned ground (CDC 2000). According to personal communications with James Tharp of BLM, Christ's paintbrush has not been found, and is not expected to be found, within the Proposed Project area due to a lack of appropriate habitat.

Special Status Plant Species

There is only one special status species that has been identified by the Idaho Conservation Data Center (CDC), or the BLM, that is within the Proposed Project area, the Simpson's hedgehog cactus (*Pediocactus simpsonii*). Cotterel Mountain supports a large population of Simpson's hedgehog cactus. This species occurs sporadically on almost every portion of the Mountain.

Noxious Weeds

There are six known noxious weed species that are currently identified by the BLM within or near the Proposed Project area (within five to ten miles). These include, leafy spurge (*Euphorbia esula*), Russian knapweed (*Centaurea repens*), diffuse knapweed (*Centaurea diffusa*), Scotch thistle (*Onopordum acanthium*), rush skeleton weed, and black henbane (*Hyoscyamus niger*). Only two, scotch thistle and black henbane, of these noxious weed species have been found within the Proposed Project area. Scotch thistle is primarily found only on the northern end of Cotterel Mountain, where black henbane is found scattered along roadways within the Proposed Project area.

Several species identified as "invasive species" do occur within the Proposed Project area. These species include: cheatgrass, bulbous bluegrass, curlycup gumweed (*Grindillia squarrosa*), annual sunflower (*Helianthus annuus*), field bindweed (*Convolvulus arvensis*), tumble mustard (*Sisymbrium altissimum*), and Russian thistle (*Salsola iberica*). These invasive species typically occur on disturbed areas including: the current roadway corridors, communication facility platforms, OHV and livestock trails, burned areas, and rodent dig spots. These species can be monitored and controlled with appropriate mitigation with the exception of cheatgrass and bulbous bluegrass. These two species have spread throughout a majority of southern Idaho and can only be controlled on a site-specific basis with intensive management actions.

3.2.2 Wildlife

This section is a summary of wildlife resources in the vicinity of the Proposed Project area. The sources of information include published literature, unpublished Idaho Department of Fish and Game (IDFG) data on big game and game birds, BLM sensitive species lists from the Burley Field Office (BFO), BLM Wildlife Data Base, and interviews with BLM and IDFG biologists familiar with the area. In addition, a year-long baseline field study was conducted starting in the fall of 2002, and included surveys of nesting raptors, breeding sage-grouse, bird use, diurnal fall raptor migration, and a radar study of nocturnal fall migrating birds and bat species. The detailed methods and results of the baseline study are provided in the Technical Baseline Reports for Biological Resources (TBR 2004). The Technical Baseline Reports for Biological Resources is a compilation of nine reports

documenting the results of field surveys, data searches, and historical BLM data summaries. These reports were prepared by numerous authors (ABR 2004; Sharp 2004; TREC 2004a; TREC 2004b; TREC 2004c; URS 2004; USDI BLM 2004) and constitute the best available knowledge of the existing biological resources within the Proposed Project area.

Typically, wildlife species are evaluated across their range by using ranking systems. These ranking systems evaluate each species population status and provide a general idea about the overall trend of the species. IDFG, Idaho BLM and CDC all use different ranking systems, which are discussed below. Species are classified by several different ranking systems including BLM sensitive species 1 to 5; Idaho State Status 1 to 5; Global Status 1 to 5, and federally protected under the Endangered Species Act (ESA) (16 U.S.C. 1531-1543) (1973) including: Endangered, Threatened and Candidate species. Federally protected species will be evaluated in greater detail in Biological Assessments (BA) presented to the United States Fish and Wildlife Service (USFWS) and available for public review.

IDFG ranks nongame species based on a ranking protocol of 1 to 5. State ranked species are summarized in the following ranks: (1) critically imperiled because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction (typically five or fewer occurrences); (2) imperiled because of rarity or because of other factors demonstrably making it vulnerable to extinction (typically six to 20 occurrences); (3) vulnerable (typically 21 to 100 occurrences); (4) not rare, and apparently secure, but with cause for long-term concern; and (5) demonstrably widespread, abundant and secure.

The Nature Conservancy is a worldwide conservation organization that ranks a species not just within one state, but also on a worldwide (global) level. The Nature Conservancy uses the same definitions for their ranking system 1 to 5 as CDC. The state status and the global status ranks of the same species provide a description of the status of this species within Idaho and worldwide.

BLM sensitive ranking includes Type 1 to 5. Species listed by the USFWS as threatened or endangered or are proposed or candidates for listing under the ESA are Type 1. Species experiencing significant declines throughout their range with a high likelihood of being listed in the foreseeable future due to their rarity and/or significant endangerment factors are Type 2. Species that are experiencing significant declines in population or habitat, or are in danger of regional or local extinctions in Idaho in the foreseeable future, are listed as Type 3. Species that are generally rare in Idaho, with the majority of their breeding range located largely outside of the state, are listed as Type 4. Watch list species are not considered BLM sensitive species and are listed as Type 5. Watch list species include species that may be added to the sensitive species list depending on new information concerning threats, species biologist evaluations, or statewide trends.

Big Game

Four big game mammal species occur within or near the Cotterel Mountain area: mule deer (*Odocoileus hemionus*), mountain lion (*Felis concolor*), California bighorn sheep (*Ovis canadensis californiana*), and American pronghorn (*Antilocapra americana*).

Mule Deer

Mule deer are the most abundant big game species in the Proposed Project area. Populations in Idaho have been decreasing since 1996, primarily due to habitat reduction, specifically critical winter habitat. Winter/year-round range is defined as that range of which a portion is used yearlong, but which during winter has a substantial influx of animals from other seasonal ranges. The Proposed Project area is located within year-round mule deer habitat. Approximately 5,475 acres (48%) of the Proposed Project area lies within winter habitat range for mule deer (IDFG 2003a; Figure 3.2-2).

Mule deer occupy nearly all habitats in Idaho from dry, open country to dense forests. They prefer rocky, brushy areas, open meadows, open pine forests, and burns (Brown 1992). Mule deer can also be found in coniferous forests, shrub steppe, chaparral, and grasslands with shrubs. Mule deer are often associated with early succession vegetation or vegetation resulting from disturbance, especially near agricultural lands.

Cotterel Mountain is within mule deer hunting management unit #55. This unit is restricted to archery between November 25 and December 19th, and any-weapon controlled hunts between August 15 to September 24th and October 5 to October 31. All other hunting means are prohibited in this unit. Mule deer harvest statistics for 1999-2003 are shown in Table 3.2-4. Table 3.2-4 shows a decline in the number of permits issued, but an increase in the number of deer harvested. For the 2003 hunting season, the number of permits being issued for the any-weapon October hunt were reduced to 350, due to the decreasing populations within the area (IDFG 2003b).

Mountain Lion

Mountain lions generally prefer mountainous country with cliffs and rimrock, and semi-wooded canyon habitat with slopes of mixed open areas and forest. They range over vast areas and thus can move through a diversity of habitat types (Holmes 2000). Mountain lions are active day or night throughout the year and in all kinds of weather. In the absence of human disturbance, peak activity occurs within two hours of sunset and sunrise; near human presence, activity peaks after sunset. With the exception of females with kittens, mountain lions are primarily solitary. Population densities are usually not more than 3 to 4 animals per 40 square miles. Mountain lion home range size varies greatly in different areas. In Idaho, home ranges of males were from 20 to 90 square miles, while females had home ranges of 5.5 to 57 square miles (Holmes 2000).

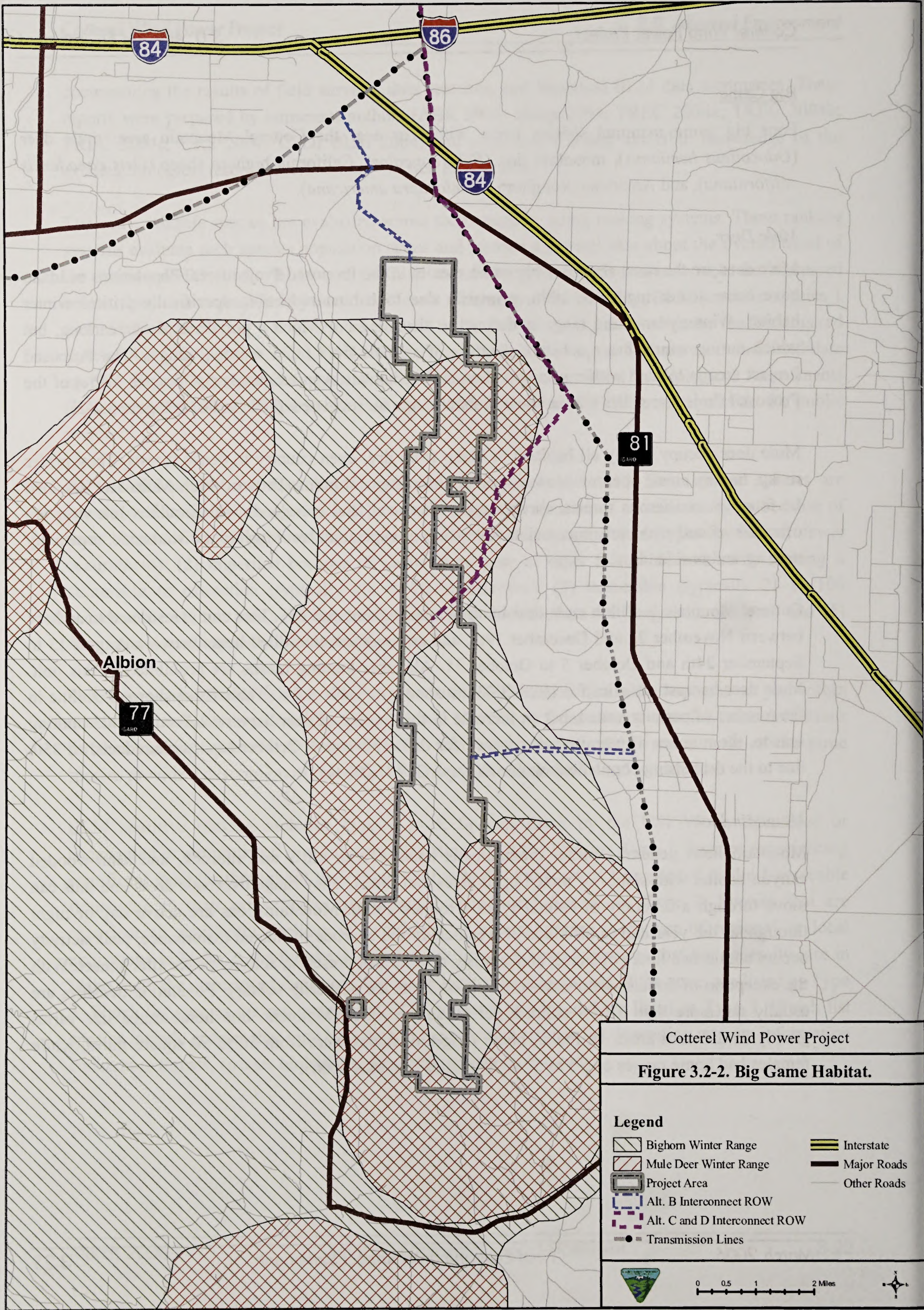


Table 3.2-4. Idaho Department of Fish and Game Unit 55 Mule Deer Harvest Statistics 1998 to 2003.

Year	Season-Type	Permits Authorized	Permits Issued	No. Hunters	Harvest			Total Days Hunted	Pct. Success	Pct. 4-pts.
					Antlered	Antlerless	Total			
1998	General Archery	NA ^a	NA	59	7	0	7	308	12	ND ^b
	Any-Weapon Early-Antlered	25	23	19	14	0	14	80	74	30
	Any-Weapon Antlered – Oct.	500	492	461	201	0	201	1669	44	37
	Total	525	515	539	222	0	222	2057		
1999	General Archery	NA	NA	80	13	0	13	433	16	ND
	Any-Weapon Early-Antlered	25	24	24	14	0	14	123	58	50
	Any-Weapon Antlered – Oct.	500	460	436	232	0	232	1800	53	28
	Total	525	484	540	259	0	259	2356		
2000	General Archery	NA	NA	ND	12	1	13	ND	ND	27
	Any-Weapon Early-Antlered	25	24	ND	19	0	19	ND	ND	31
	Any-Weapon Antlered – Oct.	500	469	ND	232	0	232	ND	ND	32
	Total	525	493	ND	263	1	264	ND	ND	
2001	General Archery	NA	NA	131	8	2	10	380	8	71
	Any-Weapon Early-Antlered	25	21	21	14	0	14	86	67	77
	Any-Weapon Antlered – Oct.	500	468	447	232	0	232	2068	52	44
	Total	525	489	599	254	2	256	2534		
2002	General Archery	NA	NA	220	12	5	17	1132	8	70
	Any-Weapon Early-Antlered	25	23	22	18	0	18	104	82	71
	Any-Weapon Antlered – Oct.	500	459	440	238	0	238	2074	54	45
	Total	525	482	682	268	5	273	3310		
2003	General Archery	-	-	229	13	7	17	763	7	58
	Any-Weapon Early-Antlered	-	-	0	0	0	0	0	0	0
	Any-Weapon Antlered – Oct.	-	-	0	0	0	0	0	0	0
	Total	-	-	229	13	5	17	763	-	-

^aNA = Not Applicable^bND = No Data

Harvest data are estimates derived from telephone sampling or harvest report cards. Data for 1999 to 2003 does not include harvest in the 300-permit youth-only either-sex deer hunt.

Mountain lions are hunted annually on Cotterel Mountain. Mountain lion hunting season in hunting management unit #55 is from August 30 to March 31 or until the female quota is reached, whichever comes first. Harvest statistics are not known for the specific unit but are tallied for the entire Magic Valley region, which includes statistics for units 43-49, 52, and 52a-57. Since 1996, there have been 190 (80 females, 110 males) mountain lions killed, primarily using hounds (76 to 80%). Of those killed, 11 to 15 percent were killed by hunters who were not hunting specifically for mountain lions (IDFG 2003b).

Mountain lions could occur on any portion of Cotterel Mountain. While conducting surveys for other resources in 2003, four Mountain lions were observed on Cotterel Mountain. One observation was of a female with two kittens. During 2004, two observations of Mountain lions were observed on Cotterel Mountain (USDI, BLM 2005). The average mountain lion population on Cotterel Mountain is estimated to range between 4-5 adult individuals.

Bighorn Sheep

California bighorn sheep (BLM sensitive Type 3; G4 and S4) inhabit high mountain grass meadows in the summer, using open slopes where the land is rough, rocky, sparsely vegetated, and characterized by steep slopes and canyons. In winter, they occupy high, windswept ridges, or migrate to the lower elevation sagebrush-steppe habitat as low as 4,800 feet to escape deep winter snows and find more nutritious forage (Lauer and Peek 1976). Typically, this species relies heavily upon grassland forage and forbs.

California bighorn sheep are currently not known to occur on Cotterel Mountain. Bighorn sheep do occur in the Jim Sage Mountains located about eight miles south of Cotterel Mountain, and may be rare visitors to Cotterel Mountain. In February of 2000 and 2001 the IDFG, BLM, and The Foundation for North American Wild Sheep reintroduced 45 California bighorn sheep into the Jim Sage Mountains. By September 2001, 17 of the originally released sheep had died. During the 2000 California bighorn sheep release, one ewe and her lamb initially used the southern portion of Cotterel Mountain, but were predated by cougars (Fowles 2002). The majority of these mortalities were the result of kills by mountain lions (Fowles 2001). The reintroduced herd has since increased to about 75 individuals. Prior to the initial bighorn sheep release, Cotterel Mountain was evaluated as potential bighorn sheep range (ID-024-EA-99-023). The IDFG has no future plans to reintroduce bighorn sheep to Cotterel Mountain.

American Pronghorn

Pronghorn groups have not been observed on Cotterel Mountain. They have been recorded to the north and east of the Proposed Project area. Pronghorn groups are considered to be unlikely to occur in the Proposed Project area.

Furbearers

Bobcat

Bobcats (Game species; S4; G5) are generally trapped for their fur on Cotterel Mountain. Populations in southern Idaho are up to one bobcat per 3.9 square kilometers (Knick 1990). Bobcats are solitary, except during breeding and typically forage on rabbits. When rabbit numbers decline, then bobcat populations follow. During 2003, two photographs of bobcats were obtained and cataloged (USDI, BLM 2005). The estimated bobcat population on Cotterel Mountain is unknown, but Cotterel Mountain offers suitable habitats for home ranges including rocks, crevices and a surrounding productive rabbit population.

Bats

Bats probably use Cotterel Mountain on a year-round basis. Bats forage and roost from lower elevations on Cotterel Mountain to the highest elevations of the mountain (IDFG 2002). Bats utilize water resources on the mountain as foraging habitat for some species, and as a water source for most, if not all species. Two types of bat groupings occur on Cotterel Mountain including resident bats that remain on-site year round or during the spring through fall breeding and rearing season and migrating bats or those that fly over the site in the spring or the fall. Bat migration typically follows the moth migrations. In southern Idaho, moth migrations generally peak about the first two weeks in October. Moth migration times vary at different elevations and depending upon the species, moths generally migrate through a higher elevation site later in the season.

One bat (unknown type) was recorded during all of the surveys for this Proposed Project; however, many bat species are known to, or suspected to occur in the study area (CDC 2002; IDFG 2002; USDI, BLM 2003). Species known to occur in the area include the western small-footed myotis (*Myotis ciliolabrum*), long-eared myotis (*Myotis evotis*), and pallid bat (*Antrozous pallidus*). Species suspected to occur in the Proposed Project area include the big brown bat (*Eptesicus fuscus*), Townsend's big-eared bat (*Corynorhinus townsendii*), Yuma myotis (*Myotis yumanensis*), long-legged myotis (*Myotis volans*), and western pipistrelle (*Pipistrellus hesperus*). Migratory species such as the hoary bat (*Lasionycteris noctivagans*) and silver-haired bat (*Lasiurus borealis*) may also pass through the area during the fall, following the moth migrations of southern Idaho.

The western small-footed myotis (BLM sensitive Type 5; G5; S4) is primarily found in arid sites with cliffs and talus slopes. It may be more abundant in southern Idaho in lava-tube caves where it hibernates in cracks and crevices. During summer months, the western small-footed myotis roosts in rock crevices, under boulders, beneath loose bark, or in buildings. It leaves its daytime roost shortly after sunset. The western small-footed myotis generally forage along cliffs and rocky slopes for small insects including moths, flies, true bugs, and ants. It hibernates in caves and abandoned mines in winter (one of the last bats to begin hibernation).

The long-eared myotis (BLM sensitive Type 5; G5; S3) is found in a wide range of habitats. In shrub communities, it may be found in crevices in cliffs, crevices in rocks on the ground, lava-tube caves,

and abandoned mines. An Idaho study found roosts were normally associated with areas adjacent to reservoirs or streams containing slow-moving water. Their diet consists primarily of moths and beetles, along with lacewings, true bugs, wasps, and bees. This species may glean insects from the surface of a variety of desert shrubs but it also occurs and feeds in coniferous forests. In northern Idaho, long-eared myotis appear to feed near the back of mines, especially at the portal. They do not seem to use these mines for night roosting or winter hibernation. The long-eared myotis is known to forage with long-legged myotis, big brown bat, silver-haired bat, and hoary bat, but an Idaho study found species foraged earlier in evening than several other bat species (Keller *et al.* 1993; Keller 2000).

The pallid bat (No BLM ranking; G5; S1) is generally found in arid or semi-arid shrub steppe/grasslands, and to a lesser extent in higher elevation coniferous forests, where rocky river canyons or cliffs are near water. They roost in rock crevices, mines, hollow cavities in trees, and buildings. Their prey can be captured in the air, but is predominantly captured on the ground. The pallid bat is a gregarious species that fly at low levels and have a much more acute sense of sight than the *Myotis* genus. They seldom hibernate, are active year round, and only migrate short distances. Breeding occurs in late fall, but sperm is stored until ovulation in early spring (IDFG 2002; Keller 2000).

The big brown bat (No BLM ranking; G5; S4) is a common species throughout North America; it can even be found in urban areas. In forested areas, they generally roost in hollow spaces in snags or living trees. The big brown bat is a common species near the entrances of caves and mines but usually does not cluster with other individuals in these colder locations. Foraging occurs primarily near the permanent roost, but temporary roosts may also be utilized. They may hibernate for a shorter period of time than members of the genus *Myotis*. Breeding occurs in late fall and sometimes in winter (IDFG 2002; Keller 2000).

The Townsend's big-eared bat (BLM sensitive Type 3, G4, S2) roosts colonially in caves, buildings, and mine adits. This species may use Cotterel Mountain for both roosting and foraging needs (IDFG 2002). In addition, there is a known hibernation site on the east side of the Proposed Project area (IDFG 2002). The Townsend's big-eared bat occurs at a wide range of elevations in a variety of habitats from desert shrub to deciduous and coniferous forests. In Idaho, some individuals likely migrate to hibernation sites to overwinter and disperse to forested areas during summer when the sexes separate. Their diet consists mostly of moths, beetles, flies, and lesser amounts of other insects. The Townsend's big-eared bat may eat insects near or over still or slow moving water (Vullo *et al.* 1999). During winter months they hibernate. If multiple hibernation sites are close together, some bats may move from one to the other (Vullo *et al.* 1999). Populations in southern Idaho are strongly loyal to roost sites during winter hibernation (Humphrey and Kunz 1976; Wackenhut 1990), and weakly loyal to roost sites during summer months due to shifting prey populations (Keller *et al.* 1993).

The Yuma myotis (BLM sensitive Type 5; G5; S3) occurs in a wide variety of upland and lowland habitats, including riparian settings, desert scrub, and moist woodlands. Summer roosts include

crevices in cliffs, old buildings, underground mines, caves, bridges, and abandoned cliff swallow nests. They eat a variety of soft-bodied small insects, especially moths and emergent aquatic insects, including stoneflies and mayflies found near and over water. No large winter concentrations of this species have been studied in Idaho (Keller *et al.* 1993; Keller 2000).

The long-legged myotis (BLM sensitive Type 5; G5; S3) occurs in a variety of habitats from desert to mountainous coniferous forests, where it may be the most common bat species, especially if open water occurs in the area. They eat a variety of small insects found in forests including moths, leafhoppers, lacewings, termites, flies, and small beetles. The food taken may vary with insect availability. Summer roosts include cliff crevices, cracks in the ground, hollows in snags, hollow areas under exfoliating bark and in living trees, and old buildings. Winter hibernation sites include caves and mine tunnels. No large winter concentrations of this species have been found in mines in Idaho (Keller *et al.* 1993; Keller 2000).

The western pipistrelle (BLM sensitive Type 4; G5; S1) is found in deserts and lowlands, desert mountain ranges, desert scrub flats, and rocky canyons. In Idaho, it prefers cliffs and canyon walls close to water. The western pipistrelle roosts in crevices, mine tunnels, and buildings. They emerge in the early evening, especially in canyon areas, where they are often seen feeding over slack water. An important predator on small swarming insects, pipistrelles feed on flying ants, mosquitoes, leafhoppers, and fruit flies, but often select only one kind of insect that is abundant when feeding (Keller *et al.* 1993; Keller 2000).

Small Mammals

Cliff chipmunks (*Neotamias dorsalis*) and an unidentified fox were observed during 2003 field surveys (TBR 2004). Several other small mammal species observed at Cotterel Mountain were Uinta chipmunk (*Tamias umbrinus*), snowshoe hare (*Lepus americanus*), coyote (*Canis latrans*), and bushy tailed woodrat (*Neotoma cinerea*) (USDI, BLM Wildlife Database 2005). A variety of other mammal species occur on Cotterel Mountain, including shrews, voles, mice, pack rats, ground squirrels, pocket gophers, weasels, coyotes, cottontails, and jackrabbits (IDFG 2003a).

Amphibians and Reptiles

No amphibians or reptiles were recorded during the 2003 field surveys. BFO has conducted amphibian and reptile surveys within the Proposed Project area from 1997 through 2004 and have found the following species around the Proposed Project area: Great Basin spadefoot toad (*Scaphiopus intermontanus*) and eggs in McClendon Spring pond; western toad (*Bufo boreas*) in Coe Creek; striped whipsnake (*Masticophis taeniatus*) along Nibbs Creek; and Common racer (*Coluber constrictor*) in mountain mahogany on rocky outcrops. Other common species that were found in the past within the general area include Pacific treefrog (*Hyla regilla*) and western skink (USDI, BLM 2005).

The majority of amphibian and reptile species found in southern Idaho could potentially be found in suitable habitats on Cotterel Mountain including: longnose lizard (*Gambelia wislizenii*); short horned

lizard (*Phrynosoma dougalassii*); desert horned lizard (*Phrynosoma platyrhinos*); sagebrush lizard (*Sceleporus graciosis*); western fence lizard (*Sceloporus occidentalis*); western skink (*Eumeces skiltoninus*); gopher snake (*Pituophis catenifer*); western garter snake (*Thamnophis elegans*); common garter snake (*Thamnophis sirtalis*); and night snake (*Hypsiglena torquata*).

Three of these species will be discussed in further detail due to their BLM sensitive species status including the common garter snake, night snake and western toad. The common garter snake (BLM sensitive Type 3; State 5; GS 5) is nocturnal/diurnal and usually found in habitats associated with water, such as streams, rivers, lakes, ponds and marshes. They can also be found in open meadows and coniferous forests. They hibernate underground, or under surface cover at times with other snake species. Active from about March or April through October in northern range and at higher elevations, active season is longer in southern range, to year-round in Florida (Nussbaum *et al.* 1983; Cossell 1997).

The night snake (BLM sensitive Type 5; State Status 5; Global Status 3) is nocturnal. This snake inhabits desert lowlands, grassland, chaparral, sagebrush flats, woodlands, and moist mountain meadows that generally have a rocky component. They can also be found in areas lacking rocks, provided there are rodent burrows (Diller and Wallace 1986; Cossell 1997).

The western toad (BLM sensitive Type 3; G4; S4) is found in mountain meadows to brushy desert flats and typically near a water source. Its distribution is throughout Idaho, but populations appear to be declining in parts of the U.S. due to water channeling and re-direction, thus leading to a loss of habitat (Bartels and Peterson 1994).

Birds

Large expanses of big and low sagebrush, juniper, grasslands and mountain mahogany are found within the Proposed Project area. These vegetation covers are potential habitat for a number of BLM sensitive species, including sage-grouse, Brewer's sparrow, grasshopper sparrow, loggerhead shrike, pinyon jay, plumbeous vireo, sage sparrow, and sage thrasher. In addition, the abundance of open cliffs, strong updrafts, and the close proximity of agricultural lands make this area prime habitat for BLM sensitive raptor species including ferruginous hawks, peregrine falcon, prairie falcon, golden eagle and Swainson's hawk. In addition to the wide diversity of bird species found during the surveys, there are specialized topographical features that provide breeding, nesting and wintering habitats for many avian species that are not widely available in the Raft River Valley-Cassia Creek and Marsh Creek sub-basin habitats.

Avian Survey Efforts

To assess the abundance and location of birds using specific habitats in the area, the following studies were conducted: (1) a yearlong avian point count survey; (2) a fall migration point survey; (3) a raptor nest survey; (4) a nocturnal bird migration survey using radar; (5) two sage-grouse lek surveys; and (6) a sage-grouse radio telemetry study (TBR 2004). The field methods chosen for use in the Cotterel Mountain study were derived from a review of guidelines for studying wind energy and bird

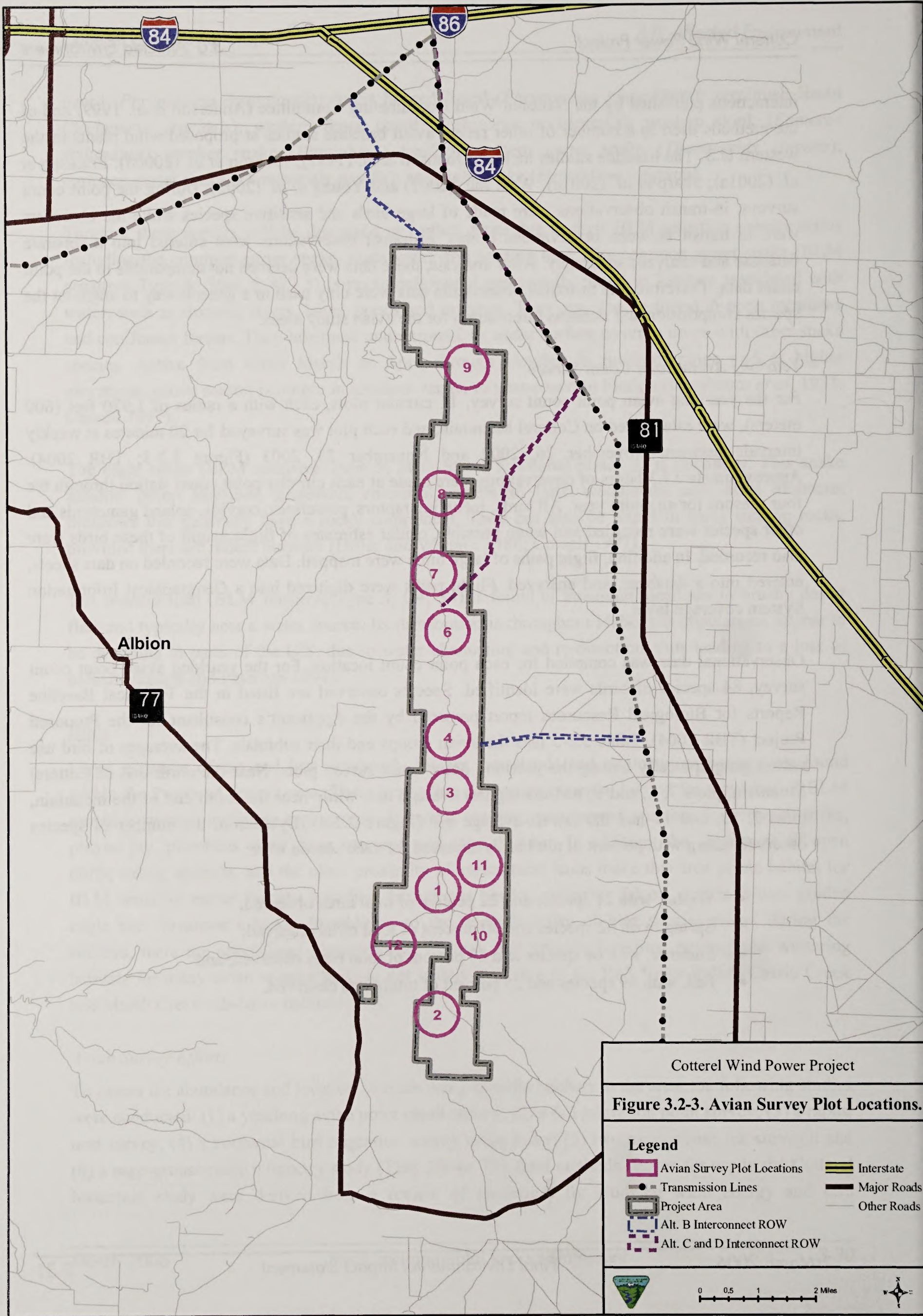
interactions published by the National Wind Coordinating Committee (Anderson *et al.* 1999) and of the methods used in a number of other recent avian baseline studies at proposed wind plants in the western U.S. The baseline studies included Johnson *et al.* (1997); Johnson *et al.* (2000b); Erickson *et al.* (2001a); Sharp *et al.* (2001a), West Inc. (2002) and Young *et al.* (2002). During the point count surveys, in-transit observations were made of large birds and sensitive species while the observers were in transit between observations points. In-transit observations were entered into a separate database and analyzed separately. After analysis, these data were deemed not comparable to the point count data. Therefore, the in-transit observation data were only used in a general way to augment the species composition and richness information for the avian study areas.

Yearlong Avian Point Count Survey

For the yearlong avian point count survey, 11 circular plots, each with a radius of 1,970 feet (600 meters), were established on Cotterel Mountain, and each plot was surveyed for 20 minutes at weekly intervals between November 26, 2002 and November 23, 2003 (Figure 3.2-3; TBR 2004). Approximately 17.3 hours of observations were made at each circular point count station through the four seasons for an entire year. All birds, including raptors, passerines, corvids, upland gamebirds and other species were recorded and when possible, ocular estimates of flight height of these birds were also recorded. In addition, flight paths of large birds were mapped. Data were recorded on data sheets, entered into a database, and analyzed. Flight paths were digitized into a Geographical Information System coverage layer.

Observational data was compiled for each point count location. For the yearlong avian point count survey, 84 species of birds were identified. Species observed are listed in the Technical Baseline Reports for Biological Resources report prepared by the Applicant's consultant for the Proposed Project (TBR 2004). Table 3.2-5 lists the avian groups and their subtotals. The averages of bird use varied geographically among the yearlong point count survey plots. Near the north end of Cotterel Mountain, plots 7, 8, and 9, had the highest average use, while near the south end of the mountain, plots 2, 11, and 12 had the lowest average use (Figure 3.2-4). By season, the number of species observed, along with percent of total birds observed for each season were:

- Winter, with 21 species and 22 percent of total birds observed;
- Spring, with 62 species and 30 percent of total birds observed;
- Summer, with 66 species and 23 percent of total birds observed; and
- Fall, with 49 species and 25 percent of total birds observed.



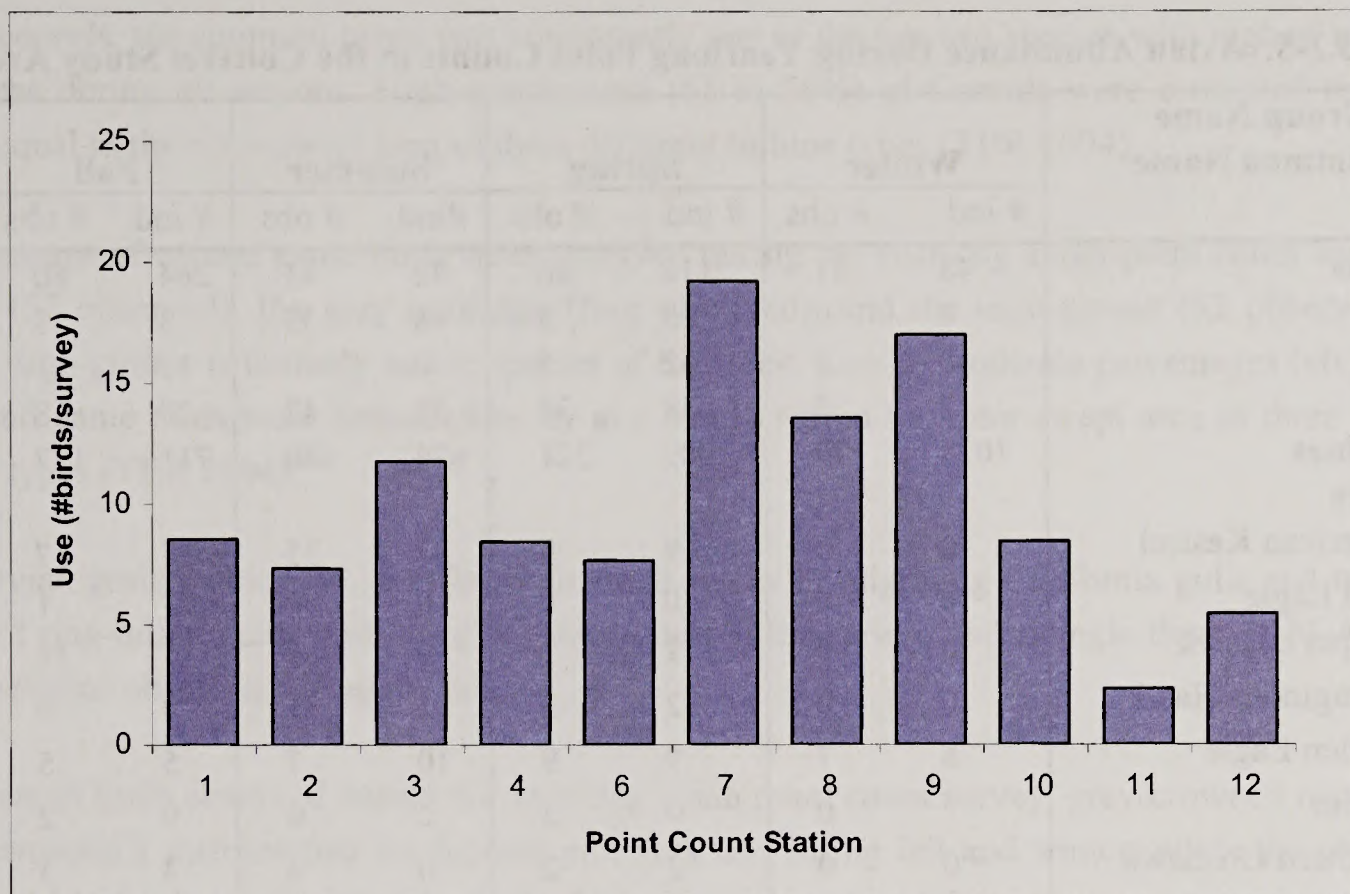


Figure 3.2-4. Avian Use by Point Count Station.

During the yearlong avian point count survey, the most abundant avian groups identified during all seasons were as percentages of total number of birds:

- Passerines, 68 percent (31 percent were finches);
- Raptors, 15 percent (observations of: 131 turkey vultures, 123 red-tailed hawks, and 119 northern harriers);
- Corvids, ten percent (mostly common ravens);
- Upland gamebirds, about two percent (about one percent sage-grouse); and
- A variety of other groups for the remaining five percent.

Passerines were consistently the most abundant group observed during all four seasons, with winter use being significantly higher than the other seasons. One half of the passerines (52 to 55%) that were observed during the point count surveys were estimated to fly at a height within the rotor-swept area of the three proposed turbine types (TBR 2004). It should be noted that while avian surveys on Cotterel Mountain indicate that approximately one half of the birds are flying within the rotor swept area of the turbine blades, not all of these birds would be expected to be killed as they would be able to fly through the rotor swept area without being hit (See Section 4.6.4).

Table 3.2-5. Avian Abundance During Yearlong Point Counts in the Cotterel Study Area.

Group Name Common Name	Winter		Spring		Summer		Fall		Total	
	# ind	# obs	# ind	# obs	# ind	# obs	# ind	# obs	# ind	# obs
Corvids	48	41	118	86	92	41	264	80	522	248
Doves	0	0	13	8	48	33	3	3	64	44
Gulls	0	0	52	5	0	0	15	1	67	6
Other	2	2	38	31	51	42	20	18	113	93
Passerines	1028	79	1009	321	676	460	711	177	3424	1037
Raptors										
American Kestrel	0	0	9	9	37	35	18	17	64	61
Bald Eagle	0	0	0	0	0	0	1	1	1	1
Cooper's Hawk	0	0	1	1	0	0	11	11	12	12
Ferruginous Hawk	0	0	2	2	1	1	0	0	3	3
Golden Eagle	8	7	9	9	10	7	5	5	32	28
Merlin		0	0	2	2	0	0	2	2	4
Northern Goshawk	0	0	2	2	0	0	3	3	5	5
Northern Harrier	4	4	72	65	33	31	21	19	130	119
Prairie Falcon	0	0	5	4	9	8	1	1	15	13
Red-tailed Hawk	1	1	38	29	57	50	47	43	143	123
Sharp-shinned Hawk	0	0	2	2	2	1	13	13	17	16
Swainson's Hawk	0	0	0	0	0	0	1	1	1	1
Turkey Vulture	0	0	80	40	138	81	13	10	231	131
Unknown Buteo	0	0	3	3	2	2	69	2	74	7
Unknown Raptor	1	1	0	0	2	2	5	4	8	7
Raptor subtotal	14	13	225	168	291	218	210	132	740	531
Upland Gamebirds										
Chukar	6	1	17	16	17	10	12	12	52	39
Gray Partridge	0	0	1	1	0	0	3	1	4	2
Sage-Grouse	0	0	19	4	1	1	12	3	32	8
Upland Gamebird subtotal	6	1	37	21	18	11	27	16	88	49
Total All Birds	1098	136	1492	640	1176	805	1250	427	5018	2008

Raptor sightings were similar during the spring, summer, and fall surveys (ranged from 1.49 to 1.89 birds per plot), but declined during the winter (to 0.18 birds per plot). Turkey vulture, red-tailed hawk and northern harrier were the three species with highest use of the area during spring and summer. Sixty-two to seventy-eight percent of raptors were estimated to fly at a height within the rotor-swept area of three proposed turbine types (TBR 2004).

Of the corvids, the common raven was consistently one of the top two species with highest use of the plot areas during all seasons. High percentages (65 to 76%) of Corvids were estimated to fly at a height equal to the rotor-swept area of three different turbine types (TBR 2004).

Three groups of upland game birds were observed during the yearlong avian point count survey: the chukar (52 observed), the gray partridge (four observed), and the sage-grouse (32 observed). The greater sage-grouse is the only native species of the three. Low to moderate percentages (six to 56%) of upland game birds were estimated to fly at a height within the rotor-swept area of three different turbine types (TBR 2004).

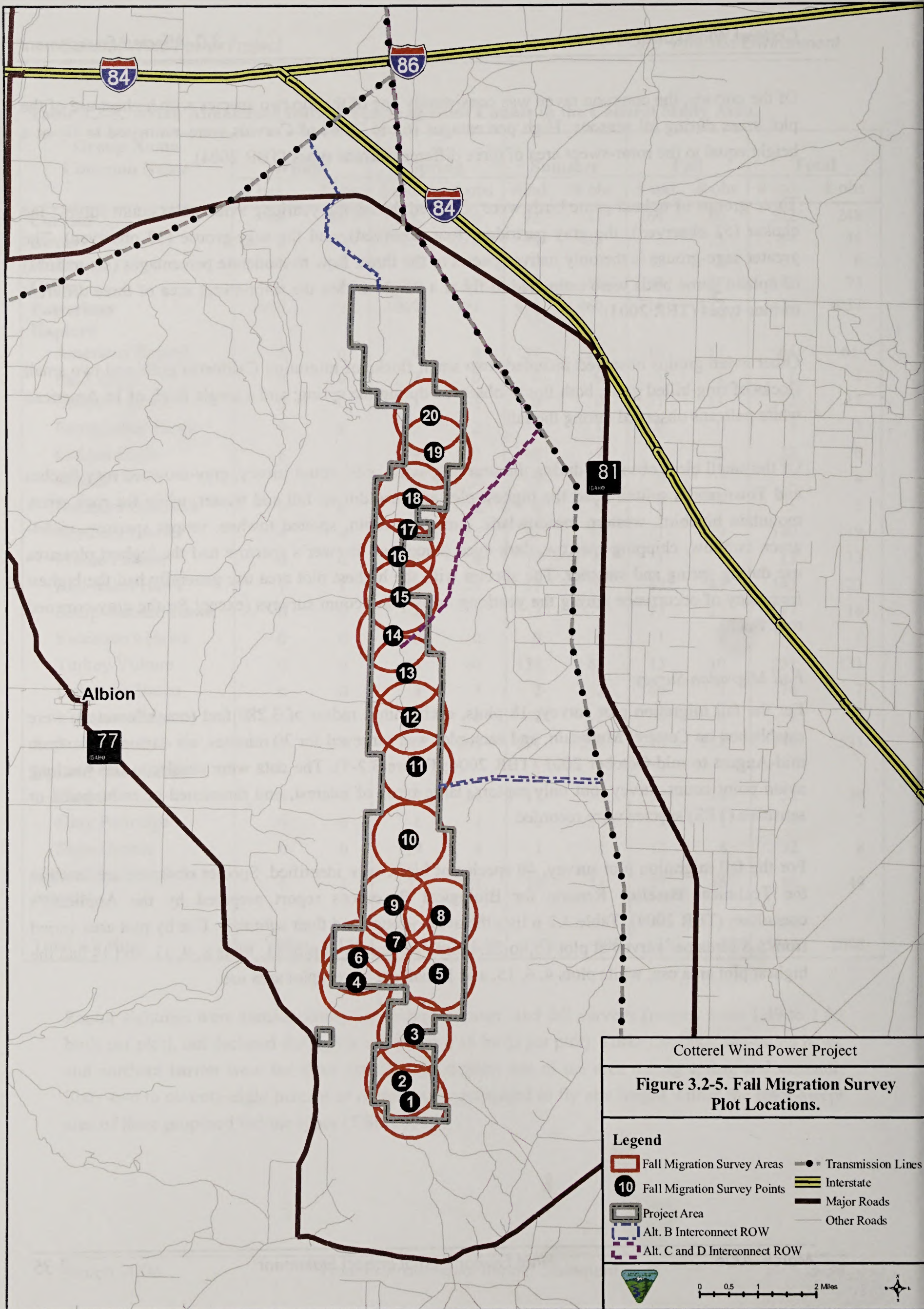
Other avian groups observed included: two small flocks of migrating California gulls and two small flocks of ring-billed gulls, both flocks observed during the spring; and a single flock of 15 American white pelicans observed during the fall.

Of the small birds observed during the yearlong avian point count survey, gray-crowned rosy finches and Townsend's solitaire had the highest plot area use during fall and winter, while the rock wren, mountain bluebird, western meadowlark, American robin, spotted towhee, vesper sparrow, violet-green swallow, chipping sparrow, dark-eyed junco, and Brewer's sparrow had the highest plot area use during spring and summer. The species with the highest plot area use generally had the highest frequency of occurrence during the yearlong avian point count surveys (except for the gray-crowned rosy finch).

Fall Migration Survey

For the fall migration plot survey, 18 plots, each with a radius of 3,280 feet (one kilometer), were established on Cotterel Mountain, and each plot was surveyed for 30 minutes, six days a week, from mid-August to mid-October 2003 (TBR 2004; Figure 3.2-5). The data were similar to the yearlong avian point count survey, but only raptors, large birds of interest, and threatened or endangered or sensitive (TES) species were recorded.

For the fall migration plot survey, 49 species of birds were identified. Species observed are listed in the Technical Baseline Reports for Biological Resources report prepared by the Applicant's consultant (TBR 2004). Table 3.2-6 lists the avian groups and their subtotals. Use by plot area varied from 5.5 birds per survey at plot 15, to 22.4 birds per survey at plot 11. Plots 8, 9, 11, and 14 had the highest plot area use, while plots 4, 6, 15, and 16 had the lowest plot area use.



Cotterel Wind Power Project

Figure 3.2-5. Fall Migration Survey Plot Locations.

- Legend**
- Fall Migration Survey Areas
 - Fall Migration Survey Points
 - Project Area
 - Alt. B Interconnect ROW
 - Alt. C and D Interconnect ROW
 - Transmission Lines
 - Interstate
 - Major Roads
 - Other Roads

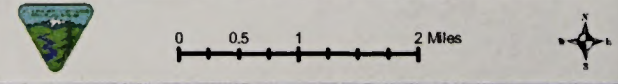


Table 3.2-6. Avian Use, Percent Composition and Percent Frequency of Occurrence by Groups with Species in the Cottrell Study Area During Avian Point Count Surveys.

Groups and Species	Use				% Composition				% Frequency of Occurrence			
	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall
Corvids	0.623	0.887	0.597	1.872	4.37	7.91	7.81	21.12	38.96	42.11	22.73	43.26
Doves	0.000	0.098	0.312	0.021	0.00	0.87	4.07	0.24	0.00	4.51	20.13	2.13
Gulls and White Pelican	0.000	0.391	0.000	0.106	0.00	3.49	0.00	1.20	0.00	3.76	0.00	0.71
Other	0.026	0.286	0.344	0.142	0.18	2.55	4.50	1.60	2.60	20.30	22.73	12.06
Passerines	13.351	7.586	4.390	5.043	93.62	67.63	57.39	56.88	64.94	75.19	89.61	59.57
Raptors												
American Kestrel	0.000	0.068	0.240	0.128	0.00	0.60	3.14	1.44	0.00	6.02	16.88	9.93
Bald Eagle	0.000	0.000	0.000	0.007	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.71
Cooper's Hawk	0.000	0.008	0.000	0.078	0.00	0.07	0.00	0.88	0.00	0.75	0.00	5.67
Ferruginous Hawk	0.000	0.015	0.006	0.000	0.00	0.13	0.08	0.00	0.00	0.75	0.65	0.00
Golden Eagle	0.104	0.068	0.065	0.035	0.73	0.60	0.85	0.40	9.09	3.01	4.55	3.55
Merlin	0.000	0.015	0.000	0.014	0.00	0.13	0.00	0.16	0.00	0.75	0.00	0.71
Northern Goshawk	0.000	0.015	0.000	0.021	0.00	0.13	0.00	0.24	0.00	1.50	0.00	1.42
Northern Harrier	0.052	0.541	0.214	0.149	0.36	4.83	2.80	1.68	3.90	27.82	15.58	12.06
Prairie Falcon	0.000	0.038	0.058	0.007	0.00	0.34	0.76	0.08	0.00	2.26	5.19	0.71
Red-tailed Hawk	0.013	0.286	0.370	0.333	0.09	2.55	4.84	3.76	1.30	14.29	24.68	19.86
Sharp-shinned Hawk	0.000	0.015	0.013	0.092	0.00	0.13	0.17	1.04	0.00	1.50	1.30	7.09
Swainson's Hawk	0.000	0.000	0.000	0.007	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.71
Turkey Vulture	0.000	0.602	0.896	0.092	0.00	5.36	11.71	1.04	0.00	20.30	26.62	5.67
Unknown Buteo	0.000	0.023	0.013	0.489	0.00	0.20	0.17	5.52	0.00	1.50	1.30	1.42
Unknown Raptor	0.013	0.000	0.013	0.035	0.09	0.00	0.17	0.40	1.30	0.00	1.30	2.13
Group Total	0.182	1.692	1.890	1.489	1.28	15.08	24.70	16.80	12.99	57.14	66.88	48.23
Upland Gamebird												
Chukar	0.078	0.128	0.110	0.085	0.55	1.14	1.44	0.96	1.30	9.02	5.84	8.51
Gray Partridge	0.000	0.008	0.000	0.021	0.00	0.07	0.00	0.24	0.00	0.75	0.00	0.71
Sage-Grouse	0.000	0.143	0.006	0.085	0.00	1.27	0.08	0.96	0.00	2.26	0.65	2.13
Group Total	0.078	0.278	0.117	0.191	0.55	2.48	1.53	2.16	1.30	11.28	5.84	11.35

Use is expressed as the average number of individuals of a particular species or group observed per plot survey. Percent composition is the proportion of the total birds observed comprised by a particular species or group. Percent frequency is the proportion of all plots surveyed in which at least one individual of a particular species or group was seen.

The most abundant avian groups as percentages of total number of raptors, large birds of interest, and TES species identified during the fall migration period were:

- Corvids, 46%;
- Raptors, 29%;
- Passerines, 17%;
- Doves, 6%; and
- Upland game birds, 2%.

The common raven was the most frequently observed species, accounting for 54 percent of observations during the fall migration plot survey. Other species observed in more than five percent of the surveys included the northern harrier (30%), American kestrel (22%), turkey vulture (19%), sharp-skinned hawk (15%), and Cooper's hawk (15%).

Daily mean raptor use ranged from 0.6 to 8.3 raptors per 20-minute survey, with day-to-day variations in numbers (Figure 3.2-6). This pattern is typical of fall raptor migration.

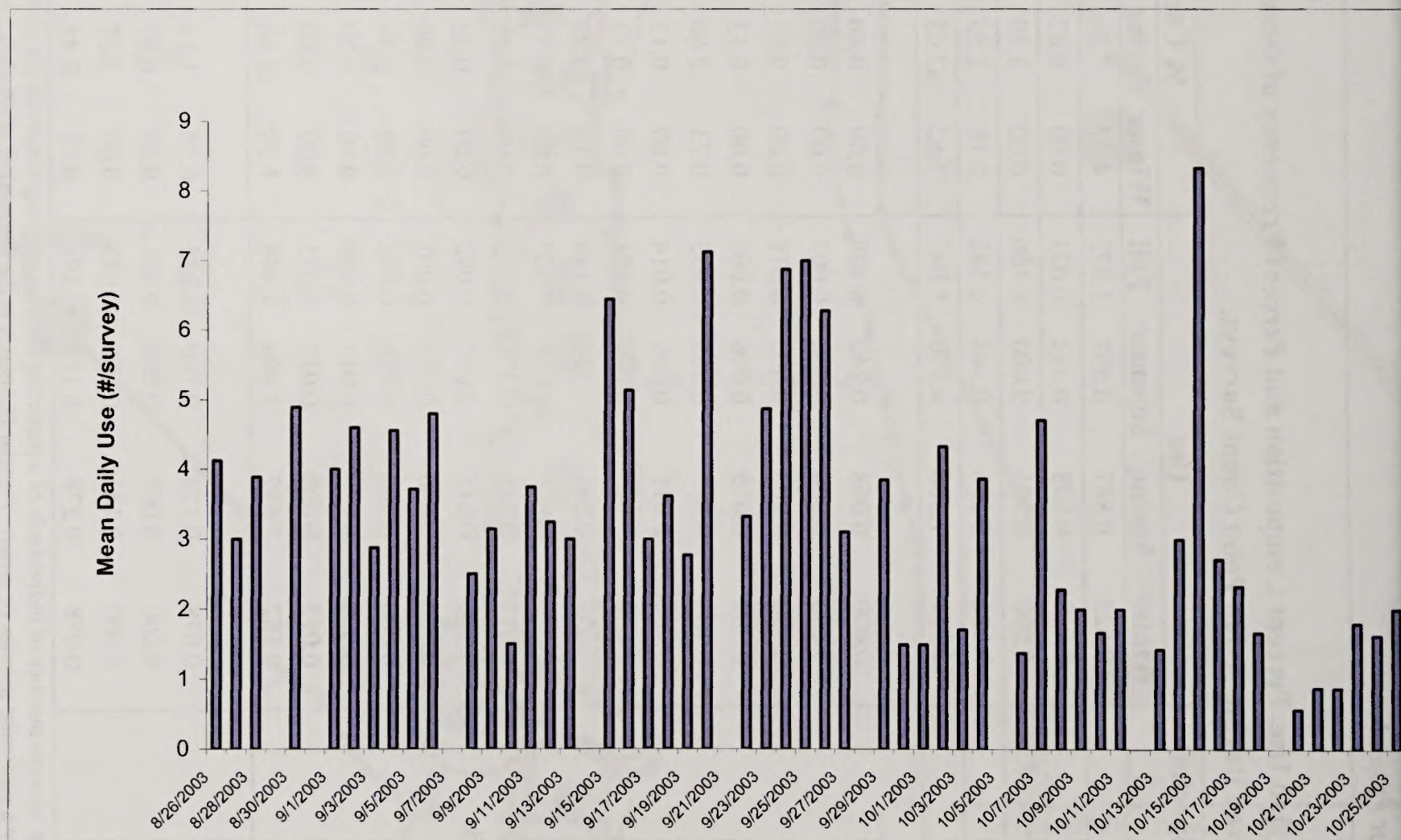


Figure 3.2-6. Mean Daily Raptor Use During Fall Migration

High percentages (66 to 70%) of corvids were estimated to fly at a height equal to the rotor-swept area of three different turbine types.

Moderate to high percentages (54 to 62%) of raptors were estimated to fly at a height equal to the rotor-swept area of three different turbine types.

Moderate to high percentages (60 to 62%) of passerines were estimated to fly at a height equal to the rotor-swept area of three different turbine types.

Moderate to high percentages (43 to 87%) of doves were estimated to fly at a height equal to the rotor-swept area of three different turbine types.

No upland game birds were estimated to fly at a height equal to the rotor-swept area of three different turbine types.

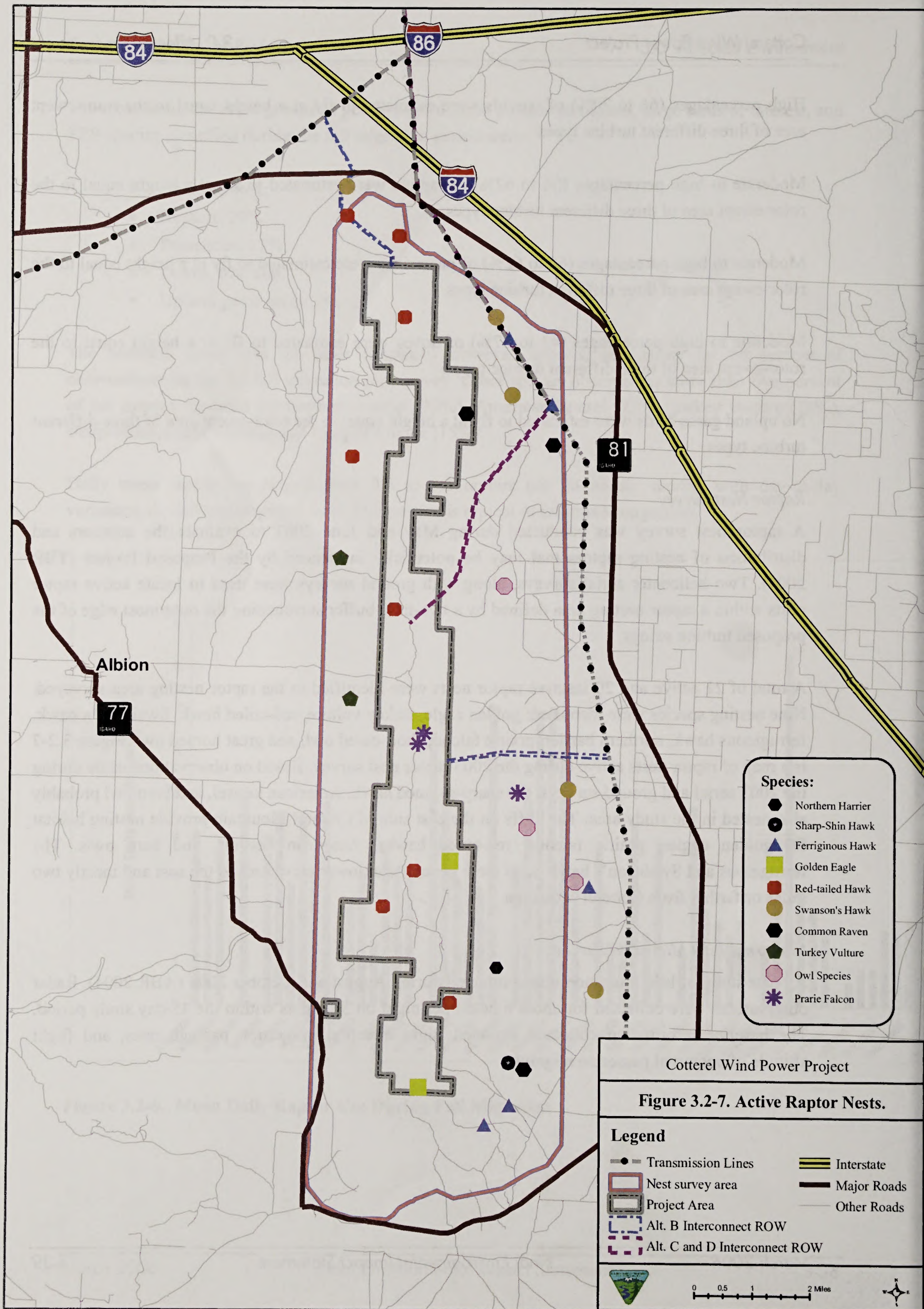
Raptor Nest Survey

A raptor nest survey was conducted during May and June 2003 to evaluate the numbers and distribution of nesting raptors that may be potentially influenced by the Proposed Project (TBR 2004). Two helicopter aerial surveys, along with ground surveys were used to locate active raptor nests within a raptor nesting area defined by a two-mile buffer surrounding the outermost edge of the proposed turbine strings.

A total of 21 active and 20 inactive raptor nests were identified in the raptor nesting area surveyed. Nine nesting species were identified: golden eagle, turkey vulture, red-tailed hawk, Swainson's hawk, ferruginous hawk, northern harrier, prairie falcon, short-eared owl, and great horned owl. Figure 3.2-7 is a map of raptor nests active during the 2003 raptor nest survey. Based on observations made during the 2003 aerial and ground surveys, the sharp-shinned hawk, American kestrel, and barn owl probably also nested in the study area. The cliffs on the east side of Cotterel Mountain provide nesting habitat for golden eagles, prairie falcons, red-tailed hawks, American kestrels, and barn owls. The ferruginous and Swainson's hawk nests were generally at lower elevations to the east and mostly two miles or farther from Cotterel Mountain.

Nocturnal Bird Migration Survey

A radar study of bird migration was conducted during August and October 2003 (ABR 2004). Radar observations were collected for about 6 hours per night on 30 nights within the 45-day study period. The baseline information collected included flight direction, migration passage rates, and flight altitude of nocturnal passerine migrants.



The results of the radar study showed:

- A south, southeast average flight direction;
- A variable migration passage rate ranging from two to 210 targets per 0.62 mile (one kilometer) per hour, with an average rate of 32 targets per 0.62 mile (one kilometer) per hour;
- An overall average nocturnal flight altitude of 1,854 feet (565 meters) above ground level; and
- On low ceiling cloud nights, avian flight altitude decreased with statistical significance in relationship to the cloud height.

About 700 to 3,700 nocturnal migrating birds were estimated to pass through the rotor-swept zone of the proposed turbines during the 45-day study period.

3.2.3 Special Status Species, Including Endangered, Threatened, Candidate Sensitive and Watch List Species

The ESA protects listed threatened and endangered plant and animal species and their critical habitats. To ensure compliance with the ESA, a BA analyzing the effects of the Proposed Project on Federally Listed and candidate species is being prepared and will be available for public review. USFWS was contacted to initiate informal consultation and to obtain a list of Federally Listed species potentially present within and adjacent to the Proposed Project area. The USFWS response indicated that the bald eagle and gray wolf are the only TES species that may occur in or adjacent to the Proposed Project area (USFWS 2003). USFWS routinely requests that BFO provide ecosystem level management and consider the following species and their habitats in project planning and review: pygmy rabbit, spotted bat, Townsend's big eared bat, California bighorn sheep, cliff chipmunk, western pipistrelle, little pocket mouse, kit fox, American white pelican, northern goshawk, prairie falcon, ferruginous hawk, Greater sage-grouse, loggerhead shrike, Brewer's sparrow, sage sparrow, grasshopper sparrow, western toad and common garter snake (Moroz 2004). In addition, observation records obtained from the CDC provided a list of state sensitive species that occur on or adjacent to the Proposed Project area. A list of BLM sensitive species that could potentially occur within or adjacent to the Proposed Project area was also provided. Table 3.2-7 presents information on special status species known or suspected to occur within the Proposed Project area.

The federal Bald Eagle Protection Act (16 CFR 668-668c) prohibits the taking possession, purchase, sale, barter, transport, export, or import of any bald or golden eagle or any part, nest, or egg of a bald or golden eagle, except for certain scientific, exhibition, and religious purposes. Eagle permit regulations are found in 50 CFR 22.

Table 3.2-7. Special Status Wildlife Species of Known or Potential Occurrence in the Proposed Project Area.

Common name	(Scientific name)	Status	Habitat Requirements/Associations	Likelihood of Occurrence
Mammals				
Gray wolf	<i>Canis lupus</i>	Federally Threatened, nonessential population ¹	Requires large home range which may include number of different topographic features; distribution appears to be prey (ungulate) dependent.	Very unlikely. Not recorded in Cassia County or adjacent counties.
Canada Lynx	<i>Lynx canadensis</i>	Federally Threatened	Primarily occurs in coniferous forests above 4,000 feet in elevation and support stable populations of snowshoe hare. They will on occasion disperse through areas of non-habitat.	Last confirmed observation in the Cassia and Twin Falls counties was 1975 and 1990. Area south of the Snake River is excluded from USFWS Lynx recovery range.
Pygmy rabbit	<i>Brachylagus idahoensis</i>	Type 2 ²	Shrub steppe with deep, friable soils.	May occur. IDFG Element Occurrence in vicinity of Proposed Project.
California bighorn sheep	<i>Ovis canadensis californiana</i>	Type 3 ²	Semi-desert arid mountains and canyons.	May occur. Potentially suitable habitat present within Proposed Project area. Bighorn sheep were reintroduced south of Cotterel Mountain on the Jim Sage Mountain.
Townsend's big-eared bat	<i>Plecotus townsendii</i>	Type 3 ²	Roosts colonially in caves, buildings, mine adits; forages over diverse habitats.	May occur. IDFG Element Occurrence in vicinity of Proposed Project.
Western pipistrelle	<i>Pipistrellus hesperus</i>	Type 4 ²	Caves, under loose rocks, crevices in cliffs, buildings; arid conditions, but near watercourses.	May occur. Potentially suitable habitat present within Proposed Project area. Nearest documented occurrence is in Twin Falls County.
Cliff chipmunk	<i>Eutamias dorsalis</i>	Type 4 ²	Pinyon pine/juniper slopes and lower edges of pines.	Documented in Proposed Project area.
Little pocket mouse	<i>Perognathus longimembris</i>	Type 4 ²	Valleys and slopes; sandy soil covered with small pebbles; sagebrush, creosote bush, and cactus; scattered pinyon pines and junipers.	May occur. Potentially suitable habitat present within Proposed Project area.
Kit fox	<i>Vulpes velox</i>	Type 4 ²	Grassland and shrub-steppe.	May occur. Potentially suitable habitat present within Proposed Project area.
Yuma myotis	<i>Myotis yumanensis</i>	Type 5 ²	Caves, tunnels, or buildings; arid areas.	May occur. Potentially suitable habitat present within Proposed Project area.
Long-eared myotis	<i>Myotis evotis</i>	Type 5 ²	Thinly forested areas around buildings or trees; occasionally caves.	May occur. IDFG Element Occurrence in vicinity of Proposed Project. Potentially suitable habitat present within Proposed Project area.

Table 3.2-7. Special Status Wildlife Species of Known or Potential Occurrence in the Proposed Project Area.

Common name	(Scientific name)	Status	Habitat Requirements/Associations	Likelihood of Occurrence
Long-legged myotis	<i>Myotis volans</i>	Type 5 ²	Buildings, small pockets or crevices in rock ledges.	May occur. IDFG Element Occurrence in vicinity of Proposed Project. Potentially suitable habitat present within Proposed Project area.
Spotted bat	<i>Euderma maculatum</i>	Type 3	High cliffs and rocky ledges, larger and older trees, hollows, and crevices. Generally associated with nearby water sources.	May occur. IDFG Element Occurrence in vicinity of Proposed Project. Potentially suitable habitat present within Proposed Project area.
Western small-footed myotis	<i>Myotis ciliolabrum</i>	Type 5 ²	Caves, mine tunnels, crevices in rocks, buildings; in or near forested areas.	May occur. IDFG Element Occurrence in vicinity of Proposed Project. Potentially suitable habitat present within Proposed Project area.
Birds				
All bird species that are protected under the Migratory Bird Treaty Act.			All	Some species documented to occur within Proposed Project area boundary.
American white pelican	<i>Pelecanus erythrorhynchos</i>	Type 2 ²	Nests colonially in large lakes, flies long distances for food, migrant.	Nests at Lake Walcott. Individuals have been observed in the vicinity of the transmission interconnect lines crossing of the Snake River. May migrate over Cotterel Mountain.
Bald eagle	<i>Haliaeetus leucocephalus</i>	Federally Threatened ¹	Rivers, lakes, forages on fish and waterfowl, carrion over a variety of habitats.	Documented to occur. Nearby wintering areas along Cassia Creek and Marsh Creek. Nesting sites on Lake Walcott.
Black tern	<i>Chlidonias niger</i>	Type 3 ²	Nests in loose colonies in lakes, marshes.	Nests at Lake Walcott. Could potentially occur in the vicinity of the transmission interconnect lines crossing of the Snake River. Could migrate over Cotterel Mountain.
Boreal owl	<i>Aegolius fimbriatus</i>	Type 5 ²	Dense coniferous forest, mixed forest, thickets of alder, aspen, or stunted spruce, most commonly in proximity to open grassy situations. Nests in tree hole, natural cavity or old woodpecker hole; sometimes in artificial nest boxes.	Documented to occur. Potentially suitable habitat present within Proposed Project area.
Brewer's sparrow	<i>Spizella breweri</i>	Type 3 ²	Shrub-steppe and alpine habitats.	Potentially suitable habitat occurs within Proposed Project area.
Calliope hummingbird	<i>Stellula calliope</i>	Type 5	Mountain forest, shrub, and grassland mosaics.	Potentially suitable habitat present within Proposed Project area.

Table 3.2-7. Special Status Wildlife Species of Known or Potential Occurrence in the Proposed Project Area.

Common name	(Scientific name)	Status	Habitat Requirements/Associations	Likelihood of Occurrence
Cassin's finch	<i>Carpodacus cassinii</i>	Type 5 ²	Open coniferous forest; in migration and winter also in deciduous woodland, second growth, scrub, brushy areas, partly open situations with scattered trees.	Potentially suitable habitat present within Proposed Project area.
Columbian sharp-tailed grouse	<i>Tympanuchus phasianellus columbianus</i>	Type 3 ²	Breeds at communal display sites (leks), grassland and steppe habitats.	Potentially suitable habitat present within Proposed Project area.
Ferruginous hawk	<i>Buteo regalis</i>	Type 3 ²	Nests on trees, cliffs, ground, forages over grassland and steppe habitats.	Documented nesting in lower elevations within Proposed Project vicinity, but outside of Proposed Project area. IDFG Element Occurrence in Proposed Project vicinity.
Flammulated owl	<i>Otus flammeolus</i>	Type 3 ²	Montane forest, usually open conifer forests containing pine, with some brush or saplings Most often found on ridges and upper slopes. Cavity nester.	May occur. Potentially suitable habitat present within Proposed Project area.
Golden Eagle	<i>Aquila chrysaetos</i>	Bald Eagle Protection Act ³	Nests on cliffs or in trees, forages over open habitats.	Documented to occur.
Grasshopper sparrow	<i>Ammodramus savannarum</i>	Type 3 ²	Grassland and shrub-steppe.	Documented to occur and nest within the Proposed Project area.
Greater sage-grouse	<i>Centrocercus urophasianus</i>	Type 3 ²	Breeds at communal display sites (leks), grassland and steppe habitats.	Documented to occur in Proposed Project area. IDFG Element Occurrence in Proposed Project area.
Green-tailed towhee	<i>Pipilo chlorurus</i>	Type 5 ²	Habitat is usually low shrubs, sometimes interspersed with trees; avoids typical forest, other than open pinyon/juniper woodlands.	Documented to occur and nest within the Proposed Project area.
Loggerhead shrike	<i>Lanius ludovicianus</i>	Type 3 ²	Shrub-steppe habitats.	Documented to occur and nest within the Proposed Project area.
Long-billed curlew	<i>Numenius americanus</i>	Type 5 ²	Grassland and shrub-steppe.	May occur. IDFG Element Occurrence in Proposed Project vicinity. Potentially suitable habitat occurs within Proposed Project area at the northern end of Cotterel Mountain.
Northern goshawk	<i>Accipiter gentilis</i>	Type 3 ²	Mature Forests.	May pass through the Proposed Project area on occasion. Was observed during avian surveys in 2003. Potentially suitable foraging habitat within the Proposed Project area.

Table 3.2-7. Special Status Wildlife Species of Known or Potential Occurrence in the Proposed Project Area.

Common name	(Scientific name)	Status	Habitat Requirements/Associations	Likelihood of Occurrence
Northern pygmy-owl	<i>Glaucidium gnoma</i>	Type 5 ²	Forests or open woodlands in foothills and mountains; frequents meadows while foraging. Nests in abandoned woodpecker holes and natural tree cavities, so requires snags and larger living trees.	May occur. Potentially suitable habitat present within Proposed Project area. IDFG Element Occurrence in Proposed Project vicinity.
Peregrine falcon	<i>Falco peregrinus anatum</i>	Type 3 ²	Nests on cliffs, forages over open habitats.	May occur. Potentially suitable habitat occurs within Proposed Project vicinity.
Pinyon jay	<i>Gymnorhinus cyanocephalus</i>	Type 5 ²	Pinyon/juniper woodland, less frequently pine; in nonbreeding season, also occurs in scrub oak and sagebrush. Nests in shrubs or trees (e.g., pine, oak, or juniper).	Potentially suitable habitat present within Proposed Project area.
Plumbeus vireo	<i>Vireo plumbeus</i>	Type 5 ²	Pinyon/juniper, oak woodland; pine savanna, aspen forests, foothill riparian forests, and Gambel oak shrublands with scattered tall trees; occasionally breeds in lowland riparian forests adjacent to foothills.	Potentially suitable habitat present within Proposed Project area.
Prairie falcon	<i>Falco mexicanus</i>	Type 3 ²	Nests on cliffs, forages over open habitats.	Known to occur, suitable habitat occurs within Proposed Project vicinity.
Red-naped sapsucker	<i>Sphyrapicus nuchalis</i>	Type 5 ²	Primarily coniferous forest that includes aspen and other hardwoods. Cavity nester.	Potentially suitable habitat present within Proposed Project area.
Sage sparrow	<i>Amphispiza belli</i>	Type 3 ²	Shrub-steppe habitats.	May occur. Potentially suitable habitat occurs within Proposed Project area.
Sage thrasher	<i>Oreoscoptes montanus</i>	Type 5 ²	Sagebrush plains, primarily in arid or semi-arid situations, rarely around towns. In northern Great Basin, breeds and forages in tall sagebrush/bunchgrass, juniper/sagebrush/bunchgrass, mountain mahogany/shrub, and aspen/sagebrush/ bunchgrass communities.	May occur. Potentially suitable habitat present within Proposed Project area.
Virginia's warbler	<i>Vermivora virginiae</i>	Type 5 ²	Arid montane woodlands, oak thickets, pinyon/juniper, coniferous scrub, chaparral. Brushy steep mountain slopes within or near dry coniferous woodlands. Will inhabit ravines or rocky slopes with dense scrub oaks or mountain mahogany. Also found along mountain streams in sagebrush, or cottonwood and willow habitat at 5,800 to 9,000 feet.	May occur. Potentially suitable habitat present within Proposed Project area.

Table 3.2-7. Special Status Wildlife Species of Known or Potential Occurrence in the Proposed Project Area.

Common name	(Scientific name)	Status	Habitat Requirements/Associations	Likelihood of Occurrence
Western burrowing owl	<i>Athene cunicularia</i>	Type 5 ²	Grassland and shrub-steppe.	May occur. Potentially suitable habitat present within northern portion of the Proposed Project area. IDFG Element Occurrence in Proposed Project vicinity.
Amphibians and Reptiles				
Common garter snake	<i>Thamnophis sirtalis</i>	Type 3 ²	Occurs in variety of habitats; lives in or near ponds, marshes, prairie swales, roadside ditches, streams, sloughs, damp meadows, woods, farms and city lots. Sea level to 8,000 feet.	Not likely to occur.
Night snake	<i>Hypsiglena torquata</i>	Type 5 ²	Occurs in variety of habitats: grassland, chaparral, sagebrush flats, deserts, woodlands, and moist mountain meadows. Rocky and sandy areas. Sea level to 8,700 feet.	Potential to occur.

KEY

Federally listed, proposed and candidate species: Species that are listed under the ESA, proposed or candidates for listing.

Type 2: Range wide/global imperilment species: includes species that are experiencing significant declines throughout their range with a high likelihood of being listed under the ESA in the foreseeable future due to their rarity and/or significant endangerment factors.

Type 3: Regional/state imperilment species: includes species that are experiencing significant declines in population or habitat and are in danger of regional or local extinctions in Idaho in the foreseeable future.

Type 4: Peripheral species in Idaho: includes species that are generally rare in Idaho with the majority of their breeding range outside the state.

Type 5: Watch list species: includes species that are not considered Idaho BLM sensitive species but current populations or habitat information suggests that species may warrant sensitive status in the future.

¹ Source: U.S. Fish and Wildlife Service consultation letter, dated September 27, 2002.

² Source: Idaho BLM Special Status Animal Species for Districts and Field Offices, dated August 2002.

³ Bald Eagle Protection Act. 16 U.S.C. §§ 668-668d, June 8, 1940, as amended 1959, 1962, 1972, and 1978. The Act prohibits the taking or possession of and commerce in bald and golden eagles.

No specific surveys were conducted for special status species. However, special status species observations were recorded during point count, in-transit, and raptor fall migration studies. Information review indicates that as many as 45 Special Status species may be present in or near the Proposed Project area (Table 3.2-7). Of the 45 TES species reported in Table 3.2-7, six are known from recent or historical records or observations, fourteen were observed during the 2003 baseline surveys for this Proposed Project, including nine species that were suspected to occur but had not previously been documented in the Proposed Project area. The only federally listed species observed was the bald eagle (*Haliaeetus leucocephalus*, Threatened).

Birds

Bald eagle (Threatened) home ranges are generally associated with large montane rivers, lakes, impoundments, and coniferous and cottonwood forests. They generally occupy riparian or lakeside habitat during the breeding season, but occasionally exploit upland areas for food and roost sites. However, nesting sites in the BFO are located at least 25 miles from the Snake River (USDI, BLM Wildlife Database 2005). Some breeding birds remain near nesting territories throughout the winter months. Wintering bald eagles are usually associated with areas that have a high number of daytime perch sites near open slow-moving water (Gough *et al.* 1998; USFWS 1986).

The bald eagle was observed only twice during the avian surveys. All observations occurred during the fall months. No nests for this species were observed. There are four bald eagle nesting sites located within the Cassia Creek-Raft River Valley area. One nesting site is located approximately eight miles south of the Proposed Project area. A second is located approximately ten miles from the Proposed Project area; a third and fourth nest are located approximately 15 miles from the Proposed Project area. An annual winter bald eagle survey route has been conducted for the past 20 years within the Cassia Creek-Raft River area. Up to 12 bald eagles are observed during the route every year with an average of five bald eagles observed per survey year. Bald eagles do winter along Cassia Creek located about three miles south of the Proposed Project area. They also are known to winter and forage for waterfowl at the man-made pond located on Marsh Creek northwest of the Proposed Project area. In addition, bald eagles have been observed perching on utility poles in the Raft River Valley located to the east of the Proposed Project area (USDI, BLM 2005). Bald eagles may search Cotterel Mountain for winter kill carrion for foraging.

The golden eagle (protected under the Bald Eagle Protection Act 1978) is found on prairies, tundra, open wooded country, and barren areas, especially in hilly or mountainous regions where they generally build stick nests on cliffs, or in trees. In Idaho they prefer open and semi-open areas in both deserts and mountains. They commonly forage in early morning and early evening and feed on small mammals, but may also eat insects, snakes, birds, juvenile ungulates, and carrion. Jackrabbits are their principal prey in southern Idaho, and there is a positive correlation between golden eagle breeding success and jackrabbit numbers reported in Idaho, Colorado, and Utah (Gough *et al.* 1998; Karl 2000). Golden eagles were observed 141 times during all avian surveys. In 2003 there were three active golden eagle nests on Cotterel Mountain. These are the only known golden eagle nests in the Raft River Valley area (USDI, BLM 2005). These nests were located on east and southeast facing

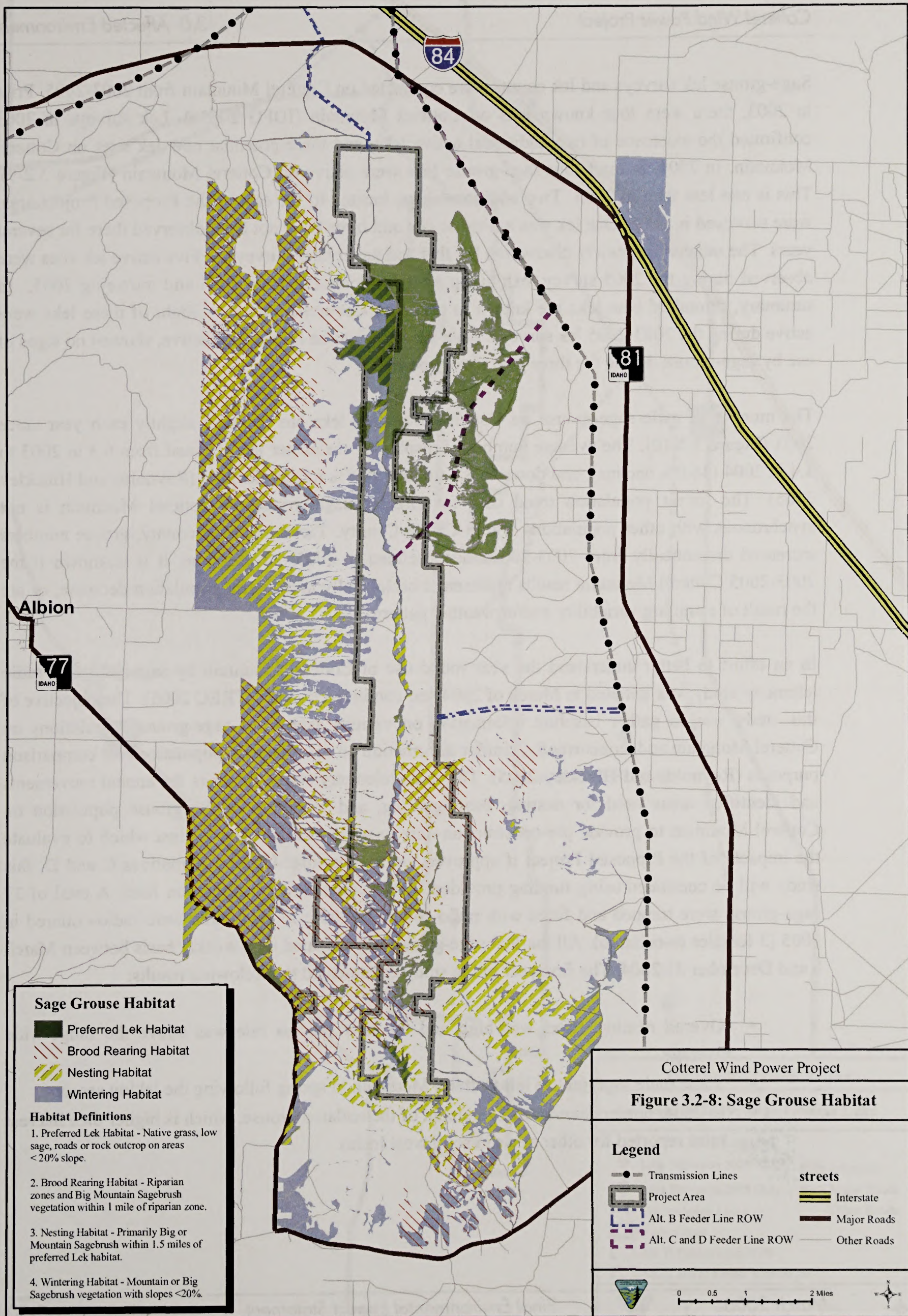
cliffs. The nest success rate for Golden Eagles was estimated at 100 percent and the fledging success rate at 75 percent (TBR 2004). During 2004 golden eagles nested on a southeast facing slope and fledged two young (USDI BLM 2005).

The greater sage-grouse is a popular upland game bird that was once abundant throughout sagebrush habitats in the west. Its original range encompassed the western to northwestern U.S. and three provinces of southwestern Canada. Currently, the greater sage-grouse range has measurably decreased within eleven states and two Canadian provinces. Since the 1950s, the greater sage-grouse population has declined by an estimated 45 to 80 percent (Braun 1998), with about 150,000 to 200,000 breeding greater sage-grouse remaining throughout the range (Connelly and Braun 1997). Greater sage-grouse are no longer present in some western states. Sage-grouse populations are continually declining throughout their range and individual populations have become increasingly separated (Knick et al. Core populations of greater sage-grouse have survived in several states, including Idaho, Montana, Wyoming, and Colorado, but even these populations have significantly declined. In Idaho, recent population trends show an estimated statewide decline of 40 percent from the long-term average (IDFG 1997). The average number of chicks produced per hen has declined by 40 to 50 percent in many areas (Connelly *et al.* 2004).

The success of the sage-grouse is directly dependent on, and correlates to, the health of the sagebrush shrub-steppe community. The decline of the sage-grouse is thought to be a result of: habitat loss or fragmentation from invasive species; agriculture; degradation due to fire; overgrazing; urbanization; hunting and poaching; predation; disease; weather; accidents; herbicides; and physical disturbance (Connelly *et al.* 2004).

All populations of sage-grouse have been reviewed for listing under the ESA, but the USFWS recently determined that listing was not warranted (USFWS 2005). USFWS cited that 92 percent of the known active leks (traditional sites where males and females congregate for courtship) occur in ten core populations across eight western states, and that five of these populations are large and expansive. In addition, approximately 160 million acres of sagebrush, a necessary habitat for sage-grouse, currently exists across the western landscape. In Canada, sage-grouse have been listed provincially as endangered or threatened (Aldridge 2000).

A sage-grouse habitat map was generated using vegetation community types, slope, and distance to leks or key habitat features (i.e., riparian areas; Figure 3.2-8). This map shows that Cotterel Mountain supports a variety of sage-grouse habitat types that are unevenly distributed across the mountain. Preferred lek habitat is concentrated at the northern portion of the Cotterel Mountain with a scattering of lek habitat to the south. Nesting, brood rearing, and wintering habitat occurs at the southern and central portions of the Cotterel Mountain and along the mountains western slopes. A large area of non-habitat occurs in the middle of the Cotterel Mountain. The area of non-habitat is typically dominated by relatively dense stands of juniper.

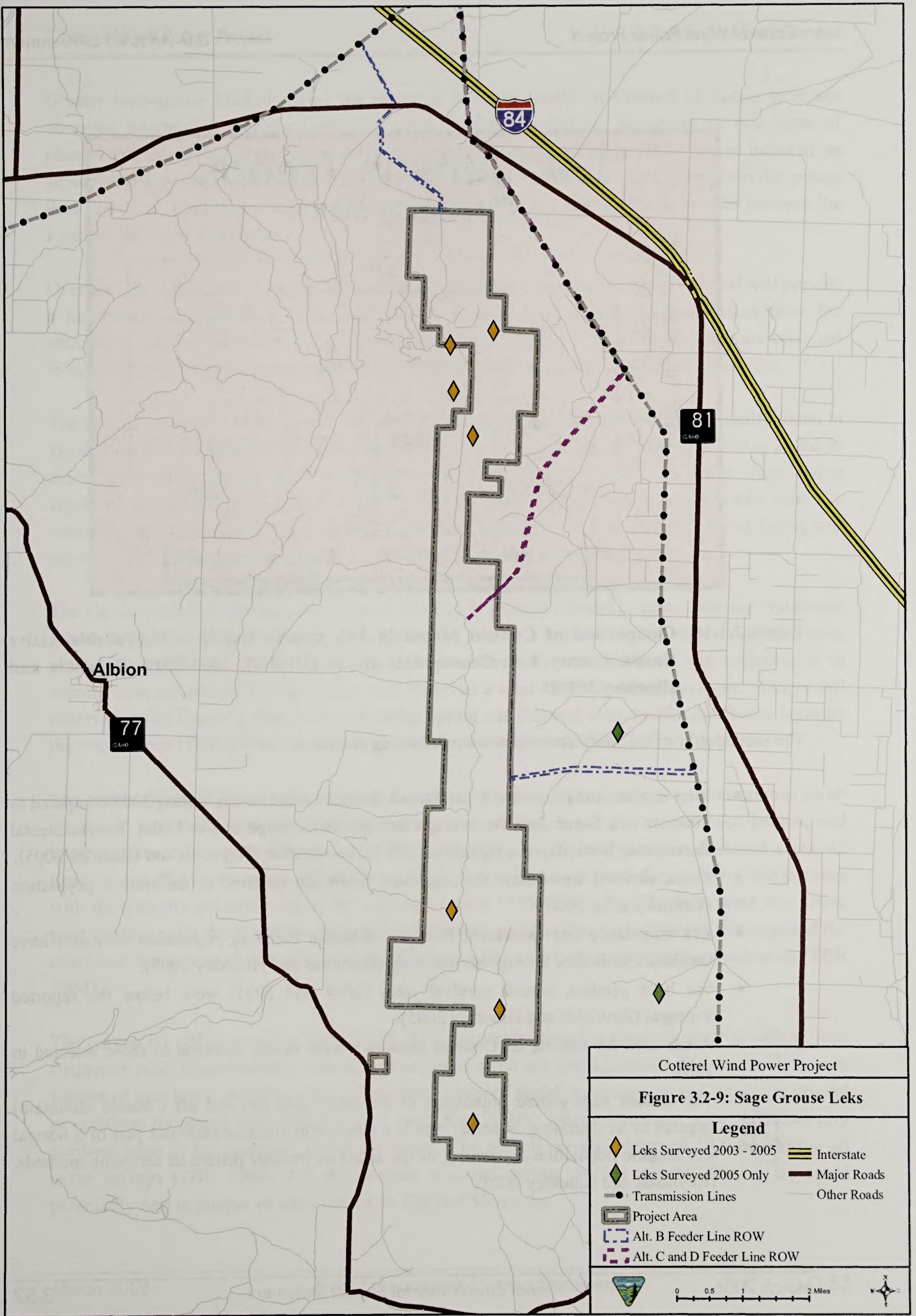


Sage-grouse lek surveys and lek counts were conducted on Cotterel Mountain from 2003-2005. Prior to 2003, there were four known leks on Cotterel Mountain (IDFG 2003c). Lek surveys in 2003 confirmed the existence of two additional active leks, and three potential new lek sites on Cotterel Mountain. In 2004, at least four sage-grouse leks were active on Cotterel Mountain (Figure 3.2-9). This is one less than in 2003. Two additional leks, located to the east of the Proposed Project area, were surveyed in 2005. One lek was a historic site and birds have not been observed there for several years. The other was a newly discovered lek that had never been surveyed. Five active lek sites were observed during the 2005 survey, exhibiting a slight increasing from 2004 and mirroring 2003. In summary, a total of nine leks are known to occur on Cotterel Mountain. Eight of these leks were active during the 2003-2005 lek surveys. One lek known to be historically active, showed no signs of use by sage-grouse during the three year survey period.

The number of male sage-grouse on Cotterel Mountain leks has declined slightly each year since 2003 (Figure 3.2-10). The average number of displaying males per lek declined from 6.3 in 2003 to 3.4 in 2004 (46.0% decline), and down to 3.1 in 2005 (8.8% further decline) (Reynolds and Hinckley 2005). The recent population trend data for Greater Sage-grouse on Cotterel Mountain is not synchronous with other populations within Cassia County. Throughout the county, grouse numbers increased dramatically from 2003-2004, then declined in 2005. At this time, it is unknown if the 2003-2005 Cotterel Mountain results represent a biologically meaningful population decrease, or are the result of sampling variability and/or weather patterns.

In an effort to better understand the year round use of Cotterel Mountain by sage-grouse, a radio telemetry study was initiated in March of 2004 and continued in 2005 (TREC 2005). The objective of this study was to gather baseline information on various aspects of sage-grouse populations on Cotterel Mountain and, concurrently, similar information on off-mountain populations for comparison purposes (Reynolds and Hinckley 2005). The radio telemetry study monitors the annual movements and identified areas used for nesting, brood-rearing, and wintering of the grouse population on Cotterel Mountain to provide pre-construction data to serve as a baseline against which to evaluate the impacts of the Proposed Project if approved, on sage-grouse. Under Alternatives C and D, this study will be continued using funding provided by the compensatory mitigation fund. A total of 37 sage-grouse were trapped and fitted with radio-collars in 2004; 23 new birds were radio-collared in 2005 (3 females re-collared). All marked sage-grouse were located on a weekly basis between March 8 and December 31 2004. The first year of the study documented the following results:

- Overall nesting effort was high and the nest success rate was above the range-wide average.
- Some male sage-grouse left Cotterel Mountain in spring following the leking season.
- In 2004, hunters harvested 21 percent of the collared grouse, which is higher than harvest rates reported for other areas in southwest Idaho.



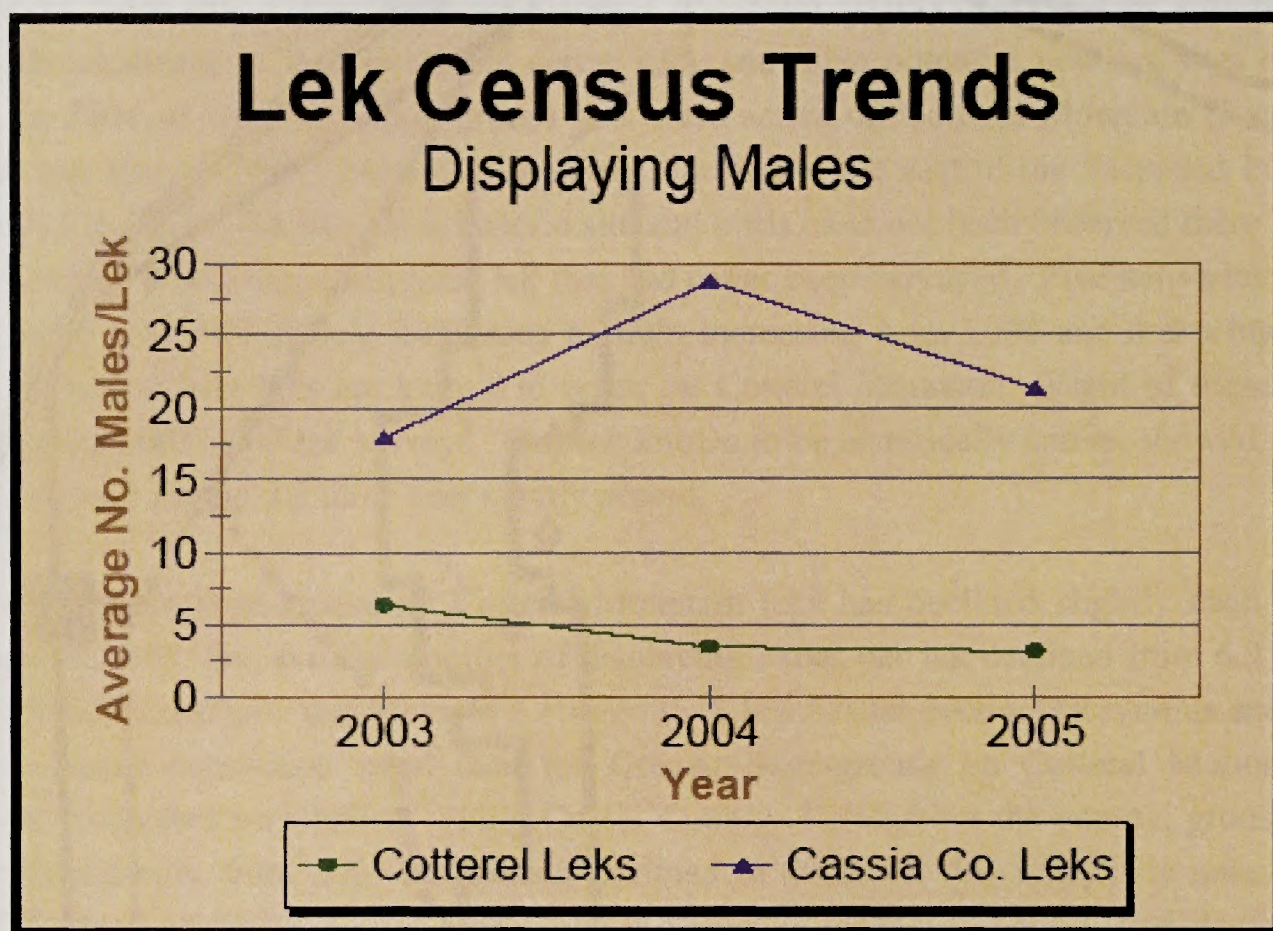


Figure 3.2-10. Comparison of Cotterel Mountain Lek Census trends and Available Active Cassia County Lek Census data (from IDF&G), 2003-2005 (Reynolds and Hinckley 2005).

The second year of the study documented the following results:

- Nest success and productivity parameters declined substantially during 2005 compared to 2004. It was lower than the average throughout its range and in Idaho. Environmental factors may have played a significant role in the variation (Reynolds and Hinckley 2005).
- Chick survival was below the suggested minimum required to maintain a population (Connelly et al. 2000).
- Lek attendance and associated Cotterel Mountain breeding population estimates have continued to decline throughout the study (Reynolds and Hinckley 2005).
- For both genders, annual survival rates (2004 and 2005) were below the reported averages (Reynolds and Hinckley 2005).
- Areas used for nesting on Cotterel Mountain were nearly identical to those selected in 2004.
- The Greater sage-grouse population of the study area (on and off Cotterel Mountain) appears to be declining. Whether this is a short-term circumstance and part of a normal and historic population oscillation, or the affect of weather pattern or sampling methods. (Reynolds and Hinckley 2005).

Greater sage-grouse tracked during the two-year telemetry study on Cotterel Mountain were not observed intermixing reproductively with other known populations. According to two years of observation and study (Reynolds and Hinckley 2005), only one female bird traveled between an adjacent lek site and Cotterel Mountain. This is not to suggest that intermingling between the groups does not occur, but there is enough evidence illustrating that the rate of genetic transfer between the local groups is low (Reynolds 2005).

Over the life of the study, baseline information on movements, productivity, and survival will provide a benchmark against which to measure the impacts to local sage-grouse population from the anticipated activity and habitat changes associated with the wind power facility. As data are collected in subsequent years of the study, additional information on these issues will become available.

The brewer's sparrow (BLM sensitive Type 3; G5, S5 protected nongame species) is usually found in association with sagebrush and alpine habitats. During migration and in winter, it is also found in desert scrub and creosote bush. An Idaho study found Brewer's Sparrows prefer large, living sagebrush for nesting (Gough *et al.* 1998; Karl 2000). Brewer's sparrows were observed a total 121 times during all avian surveys. Most observations of Brewer's sparrow occurred during spring and summer (TBR 2004). Brewer's sparrows could potentially nest on Cotterel Mountain.

The Cassin's finch (BLM sensitive Type 5; S5; G5) is generally found in open, montane coniferous forests at higher elevations. During migration and in winter, it is also found in deciduous woodlands, second growth, scrub, brushy areas, partially open sites with scattered trees, and occasionally in suburbs near mountains. Cassin's finch was observed a total 49 times during all avian surveys. All observations of Cassin's finch occurred during spring and fall and were evenly distributed between the two seasons (TBR 2004). Cassin's finch could potentially nest on the Cotterel Mountain.

The prairie falcon (BLM sensitive Type 3; G4; S5) is found in open situations in mountainous shrub steppe, or grasslands areas. In Idaho, it breeds in shrub steppe and dry mountainous habitat, and winters at lower elevations (Gough *et al.* 1998; Karl 2000). The prairie falcon was observed a total 42 times during all avian surveys. All observations of prairie falcon occurred during spring and summer with the majority occurring during the summer months (TBR 2004). In 2003 there were two active prairie falcon nests. Both nests were located on east facing cliffs. One nest contained two eggs and the other had two downy chicks. The success of these nesting and fledging attempts are unknown (TBR 2004).

The pinyon jay (BLM sensitive Type 5; G5; S2) is generally found in pinyon/juniper woodland, less frequently pine; in nonbreeding season, also occurs in scrub oak and sagebrush. They normally nest in juniper or pine trees, sometimes oak. They form complex social organizations and forage on ground or in foliage for pinion seeds (Ehrlich *et al.* 1988; Karl 2000). Cotterel Mountain is located at the very northern edge of the recorded pinyon jay range. The pinyon jay was observed 28 times during all avian surveys (TBR 2004). All observations occurred during the fall months. Pinyon jay could potentially nest in juniper or taller shrubs on Cotterel Mountain.

The sage thrasher (BLM sensitive Type 5; G5; S5) is found in sagebrush plains, primarily in arid or semi-arid communities. During migration and in winter, they can also be found in scrub, brush, and thickets (rarely around towns). In the northern Great Basin, it breeds and forages in tall sagebrush/bunchgrass, juniper/sagebrush/bunchgrass, aspen/sagebrush/bunchgrass and mountain mahogany/shrub communities. An Idaho study found that big sagebrush used for nesting was taller than average, had greater foliage density, and most often faced easterly (Ehrlich *et al.* 1988; Karl 2000). The sage thrasher was observed 17 times during the avian surveys (TBR 2004). All observation occurred during the fall months. Sage thrashers could potentially nest in big sagebrush on Cotterel Mountain.

The northern goshawk (BLM sensitive Type 3; G5; S4) is generally found in deciduous and coniferous forests, along forest edges, and in open woodlands. In Idaho they usually summer and nest in coniferous and aspen forests and winter in riparian and agricultural areas. Northern Goshawks have been studied extensively in the South Hills of Twin Falls County, Sawtooth Forest. They migrate mostly along ridges and coastlines and forage in cultivated regions (Gough *et al.* 1998; Karl 2000). The northern goshawk was observed 12 times during the avian surveys (TBR 2004). All observations occurred during the spring and fall months. Northern goshawks could potentially nest on Cotterel Mountain, most likely in an aspen stand.

The ferruginous hawk (BLM sensitive Type 3; G4; S3) is a grassland, pinyon/juniper or desert shrub-steppe nester and prey primarily on jackrabbits and rodents. Of the large raptors, it is second only to the red-tail hawk in habitat versatility. They generally avoid agricultural and cultivated lands (McAnnis 1990).

The Raft River and Curlew Valleys were designated the National Audubon Society and the American Bird Conservancy in 1997 as an "Idaho Important Bird Area" and a "Globally Important Bird Area (GIBA) for the ferruginous hawk due to the large nesting populations found within the area. Portions of the east slope of Cotterel Mountain are contained within this GIBA. It is estimated that one percent of the global ferruginous hawk productivity occurs in the GIBA. In addition, ferruginous hawk nesting densities in the Jim Sage-Cotterel Mountain area are one of the highest in Idaho. The BFO, United States Geological Survey (USGS), and Boise State University have conducted nesting, banding or productivity surveys annually on ferruginous hawks in the Raft River Valley for 23 of the past 27 years (USDI, BLM Wildlife Database 2005). There are approximately 305 ferruginous hawk nests within the BFO and of those about 20 percent produce young each year. Unlike northern Utah and some other states, since 1977, the GIBA ferruginous hawk population has remained stable. In recent years nesting productivity within the Jim Sage and Cotterel Mountains have been influenced by severe spring weather, human disturbance to nesting and other factors (TBR 2004). Ferruginous hawks are on the USFWS 2002 Birds of conservation concern list at the National, Regional, and bird Conservation Region scales (USFWS 2002) and are a priority species for conservation activities. The ferruginous hawk was observed ten times during the avian surveys (TBR 2004). All observations occurred during the spring and summer months. Ferruginous hawks have been observed most frequently during the late summer or early fall along the Cotterel Mountain eastern most ridgeline

(USDI, BLM Wildlife Database 2005). In 2003, aerial nest surveys located three active nests of this species within two miles of the Proposed Project area (TBR 2004). All were in solitary junipers on relatively flat ground on the east slope of Cotterel Mountain. Only one of the three active nests was considered successful.

The loggerhead shrike (BLM sensitive Type 3, G5; S3) is generally found in open country with scattered trees and shrubs, in savannas, desert scrub and, occasionally, in open juniper woodlands. Often found on poles, wires or fence posts. It constructs bulky, cup-shaped nest in shrubs. A study in southeastern Idaho located nests in sagebrush, bitterbrush, and greasewood (Gough *et al.* 1998; Karl 2000). The loggerhead shrike was observed eight times during the avian surveys (Sharp 2004). All observations occurred during the spring months. Loggerhead shrike could potentially nest on Cotterel Mountain.

The peregrine falcon (BLM sensitive Type 3; G5; S1) is found in various open situations from tundra, moorland, steppes, and seacoasts (especially where there are suitable nesting cliffs), to mountains, open forested regions, and populated areas. In Idaho, former and current nest sites are located in both mountain and desert regions, and are generally associated with bodies of water (Gough *et al.* 1998; Karl 2000). The peregrine falcon was observed only twice during the avian surveys. All observation occurred during the fall months. No nests for this species were observed. Suitable peregrine falcon nesting habitat (high cliff faces) does occur within and adjacent to the Proposed Project area (Sharp 2004).

The Green-tailed towhee (BLM sensitive Type 5; G5; S5) is usually found in low shrubs, sometimes interspersed with trees, and avoids typical forest, other than open pinyon/juniper woodlands. It was observed 12 times during fixed-point count observations (Sharp 2004). Green-tailed towhee could potentially nest on Cotterel Mountain.

The plumbeus, or solitary, vireo (BLM sensitive Type 5) is found in northern hardwood-coniferous forests, mixed woodlands, humid montane forests, pine savannas, oak forests, aspen forests, foothill riparian forests, Gambel oak shrublands with scattered tall trees, and pinyon/juniper communities. During migration and in winter, it can also be found in a variety of forests, woodlands, scrub, and thicket habitats, but prefers forest edges and semi-open areas. It occasionally breeds in lowland riparian forests adjacent to foothills (Karl 2000; Robbins *et al.* 1966). The plumbeus vireo was observed only once during the avian surveys (Sharp 2004). The single observation of this species occurred during the summer months. The plumbeus vireo could potentially nest on Cotterel Mountain.

Sensitive Species Not Present During Surveys

The BLM has previously documented occurrences of the Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*) in the vicinity of Cotterel Mountain. Similarly, the IDFG has identified the Long-billed curlew (*Numenius americanus*-Type 5), Northern pygmy-owl (*Glaucidium gnoma*-Type 5), and Western burrowing owl (*Speotyto cunicularia*-Type 5) in the

Cotterel Mountain vicinity, but no observations of individuals or nest sites were recorded during fixed-point counts, fall migration surveys, or intransit observations for any of these species. These species have potentially suitable habitat adjacent to the Proposed Project area, but are not likely to occur in the Proposed Project footprint area due to unsuitable available habitats and rocky soils.

There is also potential habitat within the Proposed Project area for the: Flammulated owl (*Otus flammeolus*-Type 3); Willow flycatcher (*Empidonax trailii*-Type 3); Sage sparrow (*Amphispiza belli*-Type 3); Grasshopper sparrow (*Ammodramus savannarum*-Type 3); Red-naped sapsucker (*Sphyrapicus nuchalis*-Type 5); Virginia's warbler (*Vermivora virginiae*-Type 5); and Calliope hummingbird (*Stellula calliope*) Type 5. These species have not previously been recorded within the Proposed Project area, and there were no observations of individuals or nest sites recorded during fixed-point counts, fall migration surveys, or intransit observations. Habitat is present for these species, although they have not been documented within the Proposed Project area.

Suitable habitat within the Proposed Project area for the American white pelican (*Pelecanus erythrorhynchos*; BLM sensitive Type 2; G3; S1) or Black tern (*Chelidonias niger*; BLM sensitive Type 3; G4; S2) is limited to the area where the transmission interconnect line crosses the Snake River under Alternative C and Alternative D. In addition, it is possible that these species may migrate or use the air space above the Cotterel Mountain.

Mammals

The gray wolf (Federally listed Endangered/Experimental Non-Essential Population) was historically found in most of North America. In the west, they now occur only in Alaska, Canada, Idaho, Wyoming, Montana and Washington State. This species was re-introduced to Idaho in 1997 and is estimated at a current population of 500 individuals within Idaho. Suitable habitat for these wide-ranging mammals includes (1) secluded denning and rendezvous sites to raise pups; (2) a sufficient, year-round prey base of ungulates and beaver; and (3) sufficient land area that is not subject to disturbance from humans. Wolves generally prefer habitat with no roads or very low road density. Gray wolf territories are large, encompassing up to 100 to 260 square miles.

In 1994, final rules in the Federal Register made a distinction between Idaho wolves that occur north of Interstate 90 (I-90) and wolves that occur south of I-90. Gray wolves occurring north of I-90 are listed as endangered species and receive full protection in accordance with provisions of the ESA. Gray wolves occurring south of I-90 are listed as part of an experimental population, with special regulations defining their protection and management.

No gray wolves (ESA, Experimental Population) were observed during any of the surveys conducted for the Proposed Project. However, Cotterel Mountain does provide suitable habitat for the gray wolf. Foraging opportunities include mule deer and beaver along Marsh Creek to the west and Cassia Creek to the south.

The pygmy rabbit (BLM sensitive Type 2; G4; S3) is currently petitioned for listing by the USFWS. This species typically prefers areas of tall, dense sagebrush cover with high percent woody cover, growing in deep, loose sediment (Gabler 1997). The IDFG has a historic documented occurrence in the vicinity of Cotterel Mountain along SH-77. Surveys of this historic location found no evidence of occurrence or use by pygmy rabbits. Additional historically occupied sites are located north of Albion at lower elevations. Soils over most of the Proposed Project area are shallow and rocky and therefore unsuitable for pygmy rabbits. Therefore, no further analysis on pygmy rabbits will be conducted in this Final EIS.

The cliff chipmunk (BLM sensitive species Type 4; G5; S1) is usually found in rocky pinyon/juniper woodlands and lower elevations of pine forests. Also found in higher-elevation Douglas-fir and Mexican pine. In Idaho, it generally occurs only in pinyon/juniper stands in south-central part of state and primarily inhabits cliffs and rocky areas where it consumes a wide variety of seeds, acorns, and fruits (Streubel 2000). The cliff chipmunk was observed numerous times during surveys conducted for the Proposed Project. This species has been observed and live-trapped in selected habitats from Rock Creek, Idaho east to Weston Canyon, Idaho (USDI, BLM Wildlife Database 2005).

3.3 HISTORIC AND CULTURAL RESOURCES

Historic and cultural resources are defined as nonrenewable remains of past human activity including buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance. Historic and cultural resources are protected under the National Historic Preservation Act of 1966 and the Archaeological Resources Protection Act of 1979. The archaeological record of the Proposed Project area has been partially examined through surveys ethnographic materials regarding Native American populations, and historic documents pertaining to the settlement and use of the area by Euro-Americans.

3.3.1 Natural and Cultural Setting

The Proposed Project area is located within the Snake River Plain of the Great Basin. Cotterel Mountain is bordered by the Raft River Valley to the east, the Albion Mountains to the west, and the Jim Sage Mountains to the south. The Cotterel and Jim Sage Mountains are formed from Miocene rhyolite lava flows and ash-flow tuffs and as a result contain abundant sources of obsidian (Link and Phoenix 1994). The Silent City of Rocks, found in the Albion Range south of Cotterel Mountain, is an Oligocene granite pluton, weathering of which results in rounded monoliths (Link and Phoenix 1994) and an area of unique geology that has been of cultural importance throughout prehistory and history (Heritage Research Associates 1996).

Low rainfall and extreme seasonal temperatures characterize the climate in the Snake River Plain. Native vegetation in the area reflects the relatively arid climate and is characterized by the *Artemisia tridentata*/*Agropyron spicatum* vegetation zone (Franklin and Dyrness 1988). The principal large mammal species of the sagebrush communities of the Snake River Plain include pronghorn antelope (*Antilocapra americana*) and mule deer (*Odocoileus hemionus*), though mountain sheep and bear are also present (Walker 1978). Smaller faunal resources found in desert areas include burrowing rodents,

small birds, and occasional predators such as fox, coyote, and hawk. Along the edge of the desert in sagebrush areas kangaroo rats, chipmunks, woodrats, ground squirrels, jackrabbits, cottontails, and sagehens are typical faunal resources (Harper 1986). Many of these natural resources were of great economic importance to the Native American inhabitants of the Snake River Plain. The diverse plant and animal resources provided food, materials for shelter and clothing, and minerals for making tools and weapons.

Prehistory

A general cultural sequence has been proposed for the Snake and Salmon River areas, defined by three broad periods and sub-periods which are discussed in detail below (Butler 1986; Butler 1978) (Table 3.3-1). Results of archaeological excavations indicate the prehistory of the Upper Snake River region extends back to possibly 12,500 B.C. and document a unique region within the intermontane area that is connected to both the northwestern Plains and Great Basin culture areas (Butler 1986).

Table 3.3-1. Chronological Subdivisions of Upper Snake River Prehistory.

Cultural Period	Temporal Range	Key Sites
Key Sites: Early Big Game Hunting Period Clovis Subperiod Folsom Subperiod Plano Subperiod	12,500 – 5800 B.C. 10,000 – 9000 B.C. 9000 – 8600 B.C. 8600 – 5800 B.C.	Jaguar Cave; Simon Site Owl Cave; Jaguar Cave Owl Cave; Veratic Cave
Archaic Period	5800 B.C. – A.D. 500	Veratic Cave; Owl Cave; Weston Canyon Rockshelter
Late Period	A.D. 500 – 1805	Clover Creek; Givens Hot Springs; Wilson Butte Cave

The Early Big Game Hunting Period (12500 to 5800 B.C.) represents the earliest human occupation of the Upper Snake and Salmon River area and reflects the hunting of big-game animals including several species that reached extinction during the terminal phase of the Late Pleistocene or in the Early Holocene. The Early Big Game Hunting period is divided into three subperiods: Clovis, Folsom, and Plano, and several sites throughout Idaho are attributed to this period, though dated contexts are rare (Yohe and Woods 2002). Clovis culture in Idaho is not well known, but these groups are presumed to have been hunters that pursued now-extinct forms of elephant and camel, and to have lived in caves or temporary shelters. Folsom subperiod sites are better documented in the southern Idaho region, and have been documented both as isolate finds (Swanson 1961; Moe 1982; Titmus 1985) and from *in situ* deposits (Miller 1978). In general, Folsom people appear to have hunted herds of large animals, particularly bison, and lived in temporary shelters while following these herds. The Plano subperiod is the best represented of the Early Big Game Hunting Period and is characterized by a more diverse artifact assemblage and increased occupation of rockshelters and caves (Plew 1986).

Significant climatic and environmental changes coincided with the end of the Early Big Game Hunting Period and the gradual transition to the Archaic Period (5800 B.C. to A.D. 500), which is defined primarily by a change in tool technology. In the archaeological record, the transition between the two periods primarily involves the introduction of the atlatl and dart weapon system (Butler 1978; Butler 1986). The bulk of the tool kit remained unchanged, however, suggesting that the Archaic Period does not represent a major break with the preceding Early Big Game Hunting Period. Although the horse, camel, and elephant had become extinct by this time, modern forms of bison and mountain sheep had emerged and replaced the older forms in the region. In western Idaho, another feature of the Archaic Period is the Western Idaho Burial Complex, a distinctive burial pattern best known from the Braden site near Weiser, Idaho. Increased sedentism is suggested by early pit houses found at Givens Hot Springs on the Snake River, though large semi-permanent villages are not characteristic of this period (Butler 1986).

In the northern Great Basin, the Late Period (A.D. 500 to 1805) is manifested by at least two distinctive sets of cultural remains, the Northern Fremont and the Shoshonean. The Northern Fremont is a Formative Stage culture best known from Utah, while the Shoshonean culture is a continuation of the Archaic stage (Butler 1986). Though most evidence for Fremont culture is found near the Great Salt Lake, occasional deposits have been identified in the Snake River Plain. Sites that have been recognized as Fremont are often marked by Great Salt Lake gray ware pottery in association with semisubterranean housepits, manos and pestles, and small, corner-notched Rose Spring or Rosegate projectile points and are dated between A.D. 500 and 1350. Most Late Period structures in western Idaho, however, are small wikiup-sized structures, with the exception of a large semisubterranean house identified at Givens Hot Springs (Butler 1986). In general, it appears that the Fremont cultural complex was short-lived and is not clearly identified in Idaho. The pattern of hunting and gathering established throughout the Archaic Period persisted through the Late Prehistoric and into the ethnographic past, as manifested by the Shoshonean cultural complex found along the Snake River Plain.

Ethnography

At the time of historic contact, southern Idaho was the homeland of the Northern Shoshone and Bannock Indians. Sometime prior to Euro-American contact, the Northern Shoshone, who traditionally occupied southeastern Idaho, were joined by an intrusive group, the Bannock, who spoke a dialect of the Northern Paiute language. Similar social institutions developed between the two groups, so that they became known as the Shoshone-Bannock for purposes of general description (Murphy and Murphy 1986; Walker 1978).

The Northern Shoshone and Bannock occupied an area generally along the Snake River plains and the mountains to the north, though many neighboring Eastern Shoshone and Northern Paiute groups also used resources of this region (Murphy and Murphy 1986). Local groups within the Shoshone region were often identified by other Indian groups and by early settlers based on foods that were commonly eaten, such as "Agaideka" for "salmon eaters" living along the Snake River, "Tukudeka" for "sheepeaters" found in the Sawtooth mountains, and "Kammedeka" for "jackrabbit eaters" living

along Bannock Creek and the Raft River. However, this nomenclature does not refer to political divisions and resulted in confusing designations given the high mobility and seasonal exploitation of resources by all of these groups (Murphy and Murphy 1986). Northern Shoshone populations focused near the Proposed Project area are more commonly referred to as the upper Snake River or Fort Hall Shoshone, a mounted group that lived in close association with the Bannock.

The Shoshone-Bannock were generally atypical of other Great Basin cultures because of their proximity to the Great Plains, their adoption of Great Plains cultural attributes, and their location along the upper Snake River, which allowed for a more productive resource base. Wealth accumulated in horses, organization into larger communities, and composite band political groupings further differentiate the Shoshone-Bannock from traditional Great Basin cultures (Walker 1978).

The Shoshone-Bannock relied heavily upon small game, birds, insects, seeds, and nuts, much like the Northern Paiute, though use of the horse and the nomadic lifestyle of some Northern Shoshone groups increased access to bison on the eastern Plain. This equestrian lifestyle provided mobility for hunting large game such as bison and digging camas roots in distant areas (Walker 1978). Ecological determinants prevented adoption of an equestrian lifestyle by many native inhabitants, particularly in western Idaho, and as a result there were both mounted and unmounted Shoshone groups that occupied the Snake River Plain.

The availability of anadromous fish, together with hunting and gathering activities, dictated seasonal population shifts and village locations. While buffalo hunting was a major attribute of Northern Shoshone economy, salmon fishing constituted a principal source of subsistence for the lower Snake River Shoshone living below Shoshone Falls and in western Idaho. The Shoshone recognized several runs by the agai, or salmon, the first of which would occur in March or April. Large numbers of people would temporarily gather during these runs, and the abundance of fish allowed the resource to be dried and cached for winter. In eastern Idaho, the upper Snake River Shoshone and Bannock would form into a large composite group each fall to hunt buffalo toward the east, returning together to the Snake River bottomlands to pasture their horses for the winter. In the spring, smaller groups would travel along the Snake River to below Shoshone Falls for salmon fishing, and south toward Bear River for hunting and collecting berries (Steward 1938). Annual trips were also made to Camas Prairie, near modern Fairfield, Idaho, to dig camas bulbs, while seeds and berries were gathered in the hills between the Prairie and the Snake River (Daugherty and Welch 1985; Murphy and Murphy 1986). The Northern Shoshone of the Snake River also collected pine nuts from northwestern Utah (Murphy and Murphy 1986). Seasonal cycles dictated resource use; typically, large game hunting and fishing occurred in spring until mid-summer when large groups traveled to the hunt bison. Large intertribal gatherings would also take place in summer. Women collected berries roots, nuts, seeds, and insects throughout the year until winter, which was a time of limited hunting and gathering (Walker 1978). This hunting and gathering subsistence pattern of the Shoshone-Bannock, which was based on seasonal exploitation of resources and migration, appears to have persisted from prehistoric times throughout the ethnographic period.

History

First Euro-American contact is generally attributed to the Corps of Discovery, sent by President Thomas Jefferson in 1805 to discover an overland route to the Pacific Ocean. Less than a decade following the expedition, British and American fur trading posts were established throughout the Pacific Northwest. Early explorers of the Snake River Plain included Wilson Price Hunt and partner Donald McKenzie who traveled the Upper Snake River in 1811; much of their route would be explored by other expeditions and traders throughout the 1820s and would later become the Oregon Trail (Brown 1932). Various Snake River Plain expeditions were conducted between 1824-1831, headed successively by Alexander Ross, Peter Skene Ogden, and John Work of the Hudson's Bay Company, who provided primary sources on the Northern Shoshone and Bannock in their journals (Murphy and Murphy 1986).

Competition between British and American interests manifested itself in the fur trade, but by 1821, the Hudson's Bay Company dominated the fur enterprise throughout the Pacific Northwest (Galbraith 1957). One response of the Hudson's Bay Company to the increased American competition was to create a "fur desert" by annihilating as many beaver as possible in the Snake River country so as to establish a buffer between the Pacific Northwest and the Americans to the east. In spite of attempts by the Hudson's Bay Company to reduce the American presence, trappers Kelley, Wyeth, and Bonneville each led expeditions that crossed through Snake River country in the 1830s. Wyeth later returned to the area in 1834 and established Fort Hall near present-day Pocatello (Brown 1932). The fort functioned as a center of trade, where Indians could barter skins and buffalo meat for Euro-American goods such as knives and tobacco (Franzen 1981). Fort Hall was located at a strategic position, an area still rich in beaver and at the intersection of old Indian trails from all directions that would later become emigrant routes (Brown 1932). In response to construction of Fort Hall, the Hudson's Bay Company constructed Fort Boise; competition later forced the sale of Fort Hall to the Hudson's Bay Company in 1837 (Ghent 1929). A rapid decimation of the buffalo and beaver populations led the trappers to gradually leave the Snake River country once the area no longer produced significant quantities of fur (Beal and Wells 1959[1]); by the early 1840s, the fur-trapping era drew to a close and the stage was set for the great overland migration along the Oregon Trail (Dicken and Dicken 1979). Fort Hall became an important stop along the travelers' route, as it was located approximately two-thirds of the way from Independence, Missouri to Oregon City. Hudson's Bay Company men aided the emigrants passing along the Oregon Trail and raised cattle for trade with Indians and the emigrants (Beal and Wells 1959).

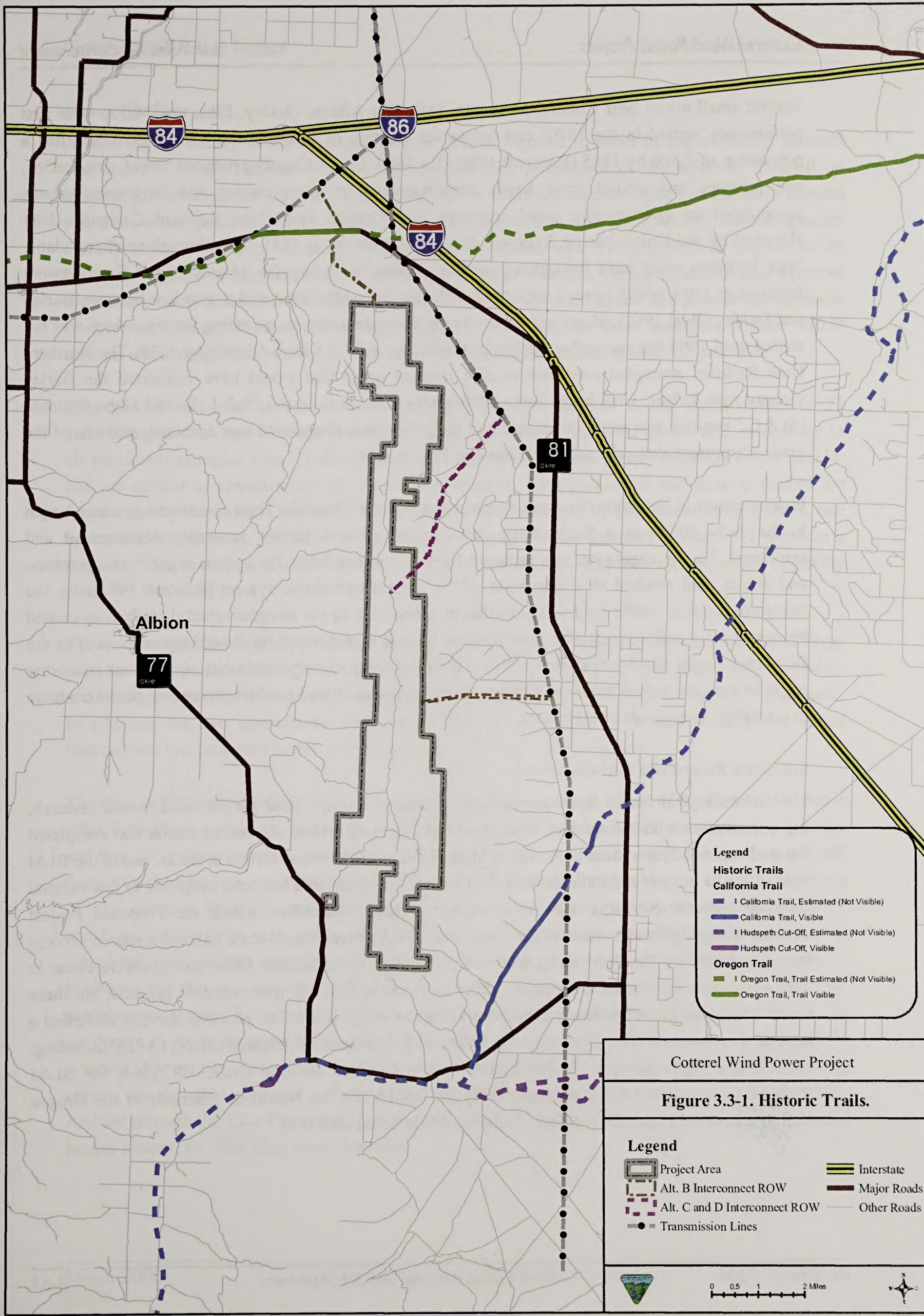
The Proposed Project area is located adjacent to the Raft River Valley, which lies immediately east of Cotterel Mountain and is situated near a historically important crossroads of the Oregon Trail. The "Parting of the Ways" or "Separation of the Trails," located on the west bank of the Raft River, was the junction where travelers had to decide whether to head south toward California or proceed west along the Snake River toward the Oregon Country (Figure 3.3-1). The California Trail route, originally traveled in 1841 by the Bidwell party, became better traveled by the mid-1840s, and use of the name "California Trail" became commonplace after 1843. The year 1849 was a turning point, as for the first time more emigrants traveled to California than to Oregon. The gold rush to California in

1849 also resulted in the opening of Hudspeth's Cutoff from the Oregon Trail (Hope 1990). The California Trail and Hudspeth's Cutoff junctioned at Cassia Creek just north of the City of Rocks, which became an important landmark for travelers along the trail (Heritage Research Associates 1996). The effects of the Oregon Trail usage on Native Americans in the region was considerable in terms of use of natural resources, primarily forage and firewood fuel, by the emigrants. An estimated 240,000 emigrants with 1.5 million animals traveled through the territory of the Fort Hall Indians during the great migration (Madsen 1980). Subsequently, hostilities between Native Americans and new emigrants increased. A number of massacres and ambushes, led by both Native Americans and military cavalry, occurred near the Raft River Valley throughout the 1800s (Sudweeks 1941).

The Idaho area remained largely unsettled by Euro-Americans, however, until the discovery of gold. By the early 1860s, a number of gold discoveries had occurred in the areas of the Salmon and Boise rivers, sparking a mining boom that lasted for several decades. Mineral mining in southeastern Idaho did not take hold until the 1870s, when mining areas were developed at Cariboo Mountain, at Bonanza Bar at the mouth of the Raft River, and at Black Pine (Franzen 1981).

Concomitant to the 1860s gold rush was the establishment of farming and ranching, including along the Raft River Valley, as demand by miners for cattle increased. The earliest settlements in southeastern Idaho were established by Mormon pioneers traveling north from Salt Lake City and were based on agriculture and ranching rather than mining (Franzen 1981). By the early 1860s, the mail and stage lines were established between Brigham City, Utah, and Boise, and preceded Mormon pioneer settlement of the Raft River Valley (Franzen 1981). The "Boise-Kelton Road" was the primary transportation corridor connecting the new settlements with Utah. Later known as the "Albion to Conner's Corner Road", this transportation corridor went through the community of Sweetzer and south of Cotterel Mountain along current SH-77.

The increased Euro-American settlement and subsequent disruption of traditional Native American lifeways resulted in periodic skirmishes in southern Idaho that culminated in the Bannock War of 1878 and the Sheepeater War of 1878-1879 (Murphy and Murphy 1986). The process of placing the Native Americans onto reservations in this region began in the 1860s and the Fort Hall Reservation was set aside in 1867. Encroachment by white settlers resulted in a series of cessions throughout the nineteenth and early twentieth centuries that reduced the original size of the reservation considerably (Murphy and Murphy 1986; Ruby and Brown 1992).



Several small towns near Cotterel Mountain, including Albion, Oakley, Elba, and Malta, were first permanently settled in the 1870s and led to the creation of Cassia County in 1879, which had a population of 2,500 by 1885 (Bancroft 1890). By 1890, Cassia County produced wheat, oats, barley, and potatoes and grazed large herds. Improvements in transportation and irrigation systems precipitated an agriculturally based economy. The Oregon Short Line Railroad Company, later absorbed by the Union Pacific Railroad, began construction in 1881-1884 through southern Idaho. Spur branches were built throughout southern Idaho, including the Minidoka and Southwestern Railroad in 1904, which headed west toward Burley from Minidoka, and a spur line between Burley and Oakley (Beal 1962). Many towns sprung up along the railroad, including Burley, which was not settled until 1905 but succeeded Albion as the county seat of Cassia County by 1918. The Northern Utah Railroad attempted construction of a railroad grade that would have connected the Burley vicinity with Kelton, Utah in the early 1900s. Also referred to as the "Salt Lake and Idaho Railroad (SL&I)," this line was never completed and the project was abandoned near Idahome; portions of the grade are present along the northern Proposed Project area.

Improvements in irrigation via canal construction and the Minidoka Dam construction, which began in the early 1900s as a Reclamation Act project, allowed further economic development and settlement. Native vegetation was replaced by irrigated croplands for grains, sugar beets, potatoes, and alfalfa, and resulted in a disruption of the natural hydrologic system (Franzen 1981). By the twentieth century, public land was set aside as a response to the environmental disturbances caused by overgrazing and deforestation, and resulted in land management by federal agencies such as the BLM and Forest Service (Franzen 1981). To date, Cassia County retains its agricultural economy; sugar beet plants, potato processing plants, dairy farms, and wood product processing plants continue to contribute to regional development.

Literature Review and Records Search

The archaeological record has been partially examined through field survey, background research, and consultation with Native American groups. A literature review and record search was completed for the Proposed Project area at the Idaho State Historic Preservation Office in Boise, and at the BLM field office in Burley, and indicates that the Cotterel Mountain area has been subjected to few cultural resource surveys. No large-scale inventories had been undertaken within the Proposed Project corridor along higher elevations of the ridgeline, though several small-scale cultural resource surveys were conducted by the BLM along scattered portions of the mountain. Other surveys were linear in nature and were conducted for pipeline, fiber optic cable line, and transportation projects, but these inventories were limited to lower elevations along the valley floor. The previous surveys identified a total of six resources in or adjacent to the Proposed Project area of potential effects (APE), including: 10CA298, a lithic scatter; 10CA862, the Oregon National Historic Trail; 10CA864, the SL&I Railroad Grade; 10MA3, a prehistoric campsite; 10MA273, the Northside Alternate of the Oregon National Historic Trail; and the Twin Falls Northside Canal (000789).

Survey Findings

Archaeological survey of the Proposed Project APE is required to assist in implementing Sections 106 and 110 of the National Historic Preservation Act, procedures of the Advisory Council on Historic Preservation (36 CFR 800), and BLM policy requiring inventory and evaluation of cultural resources within potential impact areas. Section 106 requires that, prior to any action, federal agencies identify cultural resources potentially affected by the action, which may qualify as eligible to the National Register of Historic Places (NRHP). If eligible resources are identified, federal agencies must take prudent and feasible measures to avoid or reduce adverse impacts and provide the Advisory Council on Historic Preservation an opportunity to comment on these measures. Under NRHP criteria, archaeological sites are generally recognized as eligible based on research potential.

The cultural resources inventory and evaluation activities resulted in the identification of 21 archaeological sites and 63 isolated finds in or adjacent to the Proposed Project APE, in addition to six previously recorded sites. To date, a total of 27 sites are identified in the Proposed Project corridor and are subject to consideration of construction impacts. Both prehistoric and historic themes are represented by the cultural materials. Twenty-one sites are defined by prehistoric lithic scatters, two by historic can scatters, and four as linear historic transportation corridors. Table 3.3-2 provides a summary of archaeological sites within the Proposed Project APE and their recommended eligibility status for the NRHP.

The inventory focused on an approximately 36-mile long, 200 to 400-foot wide (ca. 1358 acre) linear corridor. This included the highest elevations of the ridgeline where the wind turbines and secondary access roads would be constructed, where the majority of the Proposed Project impacts would occur. In addition, the two transmission interconnect lines proposed under Alternative B, and a single interconnect line proposed under Alternative C and D were also inventoried.

The sites and isolates identified during survey reflect multiple periods of use of the Cotterel Mountain ridge throughout prehistory, and more limited use in the historic past. Based on survey, the quantity and type of isolates and sites are indicative of transitory use for hunting, migration, and/or spiritual quests. Of the 63 newly recorded isolates, seven are historic and 55 are prehistoric artifacts consisting of lithic debitage, bifacially-worked stone tools, or cores. A single cairn was encountered. Prehistoric site types range from very small lithic scatters exhibiting limited complexity to larger scatters containing considerable variation in material and tool types. No evidence was found for extensive habitation but this was not expected given the scarcity of permanent water sources as well as the mountainous terrain. Resource-rich regions along the Raft River and Snake River would have been conducive to more permanent occupation, and prehistoric use of the ridge would likely have been seasonal due to the high elevation and annual snowfall. Based on diagnostic tools noted during survey, the recorded sites and isolates address the theme of prehistoric use from at least the Mid-Archaic through the Late Prehistoric periods; while it is likely that the area has a considerably older human history, no older sites were identified.

Table 3.3-2. NHRP Eligibility for Sites Within the Proposed Project Area.

Site Number	Site Type	NRHP Eligibility Recommendation
10CA298	Lithic Scatter	Unevaluated
10CA862	Oregon Trail	Listed
10CA864	SL&I Railroad Grade	Unevaluated
10MA3	Lithic Scatter	Unevaluated
10MA273	Oregon Trail, Northside Alternate	Eligible
000789	Twin Falls Northside Canal	Unevaluated
CM-S-1	Lithic Scatter	Ineligible
CM-S-2	Lithic Scatter	Eligible
CM-S-3	Lithic Scatter	Eligible
CM-S-4	Lithic Scatter	Ineligible
CM-S-5	Lithic Scatter	Ineligible
CM-S-6/8	Lithic Scatter	Eligible
CM-S-7	Lithic Scatter	Ineligible
CM-S-9	Lithic Scatter	Ineligible
CM-S-10	Lithic Scatter	Ineligible
CM-S-11	Lithic Scatter	Ineligible
CM-S-12	Lithic Scatter	Ineligible
CM-S-13	Lithic Scatter	Ineligible
CM-S-14	Lithic Scatter	Ineligible
CM-S-15	Lithic Scatter	Ineligible
CM-S-16	Tin Can Scatter	Ineligible
CM-S-17	Lithic Scatter	Ineligible
CM-S-18	Lithic Scatter	Ineligible
CM-S-19	Tin Can Scatter	Ineligible
CM-S-20	Lithic Scatter	Ineligible
CM-S-21	Lithic Scatter	Potentially Eligible
CM-S-22	Lithic Scatter	Ineligible

Evidence for historic use of the area is more limited but includes six archaeological resources and six isolated finds. These include linear transportation corridors located along the valley floor, such as sites 10CA864, the "SL&I Railroad Grade," 10CA862, the Oregon National Historic Trail, 10MA273, the Northside Alternate of the Oregon National Historic Trail, and the Twin Falls Northside Canal. Historic sites CM-S-16 and CM-S-19 are both small historic tin can scatters that were identified during survey of higher elevations along the ridgeline. The isolates recorded include assorted tin cans, an enamelware pail, and a horseshoe. The recorded historic sites and isolates likely represent the themes of transitory ranching or hunting activity dating from the late-nineteenth to mid-twentieth century.

Based on apparent integrity of the recorded resources and identified research potential, NRHP eligibility was assessed for sites within the Proposed Project area. Of the previously and newly

recorded sites, only one, 10CA862, the Oregon National Historic Trail, is listed on the NRHP. Four prehistoric sites defined by lithic scatters, CM-S-2, CM-S-3, CM-S-6/8, and CM-S-21, as well as the Northside Alternate of the Oregon National Historic Trail (10MA273) are recommended as eligible or potentially eligible for the NRHP. Fifteen prehistoric sites (CM-S-1, -4, -5, -7, -9, -10, -11, -12, -13, -14, -15, -17, -18, -20, and -22) and two historic sites (CM-S-16, and CM-S-19) are recommended as ineligible for nomination to the NRHP based on lack of integrity and/or information potential. Two prehistoric sites (10CA298, 10MA3), one historic site, the SL&I Railroad Grade (10CA864), and one historic structure, the Twin Falls Northside Canal (000789) remain unevaluated due to insufficient data.

3.4 AMERICAN INDIAN CONCERNS

3.4.1 Treaty Rights

American Indian concerns are identified through consultation as directed by the Fort Bridger Treaty of 1868, the Ruby Valley Treaty, Executive Order 13007 (Sacred Sites Act) and Executive Order 13175 (Government-to-Government Consultation).

Shoshone-Bannock treaty rights are those rights reserved or retained by the Shoshone-Bannock Tribes as stated in the 1868 Ft. Bridger Treaty. Specifically, “they shall have the right to hunt on the unoccupied lands of the U.S. so long as game may be found thereon, and so long as peace subsists among the whites and Indians on the borders of the hunting districts.” Later interpretations of these rights include any right not specifically extinguished by the treaty, such as gathering, fishing, collecting plants, and collecting materials important to both the secular and sacred well being of tribal members.

Shoshone-Paiute: Although the Duck Valley Reservation of the Shoshone-Paiute was established by Executive Order in 1877, the Shoshone-Paiute understand that they retain the aboriginal right as a consequence of the Ruby Valley Treaty. The Shoshone-Paiute Tribes firmly maintain that the Ruby Valley Treaty neither ceded land nor extinguished rights held by the Shoshone-Paiute.

During scoping consultation, the Shoshone-Bannock and Shoshone-Paiute expressed concern about how the Proposed Project would affect the excises of their rights on Cotterel Mountain. Both Tribes stated that Cotterel Mountain is still important to them. Comments included access, wildlife, and the preservation of their ability to excises their rights. Specifically, the Shoshone-Bannock mentioned traditional rabbit hunting grounds located several miles to the east of Cotterel Mountain in the Raft River Valley. Concerns about spccific resources and interests within Proposed Project area were not raised.

Government-to-Government consultation will continue and conclude when the terms of Executive Order 13175 are fulfilled.

3.4.2 Trust Responsibility

The BLM has a trust responsibility to the Tribes to acknowledge and preserve the Tribal rights for present and future generations and will continue to address concerns identified by the Tribes regarding the environment, natural and other resource, spiritual and cultural sites on land managed by the BLM.

3.4.3 Traditional Cultural Places and Use Areas

Section 101(d)(6) of the National Historic Preservation Act (NHPA) specifies that the traditional or historical importance an Indian tribe attaches to a particular place may make the place eligible for the National Register of Historic Places (NRHP). National Register eligibility is determined by evaluation of a candidate property's characteristics against the National Register criteria in 36 CFR 60.4. The NHPA directs federal agencies carrying out their Section 106 (of the NHPA) responsibilities to consult with any Indian tribe whose tradition or history may contribute to the National Register eligibility of a potentially affected property. A goal of consultation is to identify tribally significant properties that may be eligible for the NRHP and to understand tribal concerns sufficiently to take into account the effects which proposed federal actions may have on properties determined to be eligible for the National Register of Historic Places.

Information concerning Traditional Cultural Places and Use Areas is considered highly sensitive by Tribal members. Locations and uses are carefully guarded by Tribal members and would be similarly treated within the confines of government-to-government consultation.

The BLM has initiated Native American consultation for the purposes of identifying properties of traditional cultural or religious significance. The BLM and tribal representatives from the Shoshone-Bannock Tribes and the Shoshone-Paiute Tribes participated in site visits to the Proposed Project area. Consulted parties expressed some knowledge of past use of the Cotterel Mountain area. A specific use may have been as an historic transportation corridor for the Tribes. No specific concerns about culturally sensitive areas in the Proposed Project area were presented during consultation with the Shoshone-Bannock Tribes. The Shoshone-Paiute Tribes indicated that the sage-grouse is a species of spiritual significance and that many of the springs could have a spiritual importance to the Tribes as well. Consultation will be on-going during the course of the Proposed Project.

3.4.4 Sacred Sites and Uses

Executive Order 13007 directs federal agencies to accommodate Indian religious practitioners access to and ceremonial use of Indian Sacred Sites and to avoid adversely affecting the physical integrity of such sites and to seek alternatives that would resolve potential conflicts between proposed actions and the access/use of sites considered sacred. In some cases, it may not be possible to distinguish between traditional cultural places (e.g. sites of religious or cultural importance) considered under the NHPA and sacred sites considered under EO 13007. The similarity among these is that tribal consultation is necessary and serves as a beginning point for their identification.

No specific sacred sites on Cotterel Mountain have been identified during consultations with either the Shoshone –Bannock or the Shoshone-Paiute Tribes. It was noted that ridges and mountaintops had a special interest to the Tribes.

3.5 SOCIOECONOMICS

This report describes the existing social and economic conditions in the Proposed Project area, and analyzes the socioeconomic impacts that would be attributable to construction and operation of the Proposed Project under each alternative. Socioeconomic issues analyzed here include: labor force, employment, and income; population and housing, including property values; taxes; social values; and environmental justice issues. The study area for this analysis is Cassia County and Minidoka County combined. The Proposed Project would be located entirely within Cassia and Minidoka Counties. Local purchases and tax benefits attributable to the construction contract, and the permanent increase in property values attributable to the Proposed Project would result in economic benefits to both Cassia County and Minidoka County.

3.5.1 Existing Conditions

Sources of information for the existing conditions include the Idaho Department of Labor (IDOL); local cities, counties, school districts, public services agencies, real estate professionals, newspapers, and economic development associations; the U.S. Census Bureau; private research findings (for travel impact data and property value information); the Idaho Department of Commerce; the Idaho State Tax Commission; the Census of Agriculture; and the U.S. Department of Labor. Estimated and projected economic data were collected for past, current and future conditions. For all economic variables, data are presented for the most current year for which that type of data was available. Existing conditions are the same for all build alternatives.

3.5.2 Regional Economy and Community

Background

The Proposed Project would be located in Cassia and Minidoka Counties, beginning south of where I-84 meets Interstate 86 (I-86) and extending south (Figure 1.0-1). Cassia County is a rural county surrounded by Twin Falls, Jerome, Minidoka, Blaine, Power and Oneida counties in Idaho; Elko County in Nevada; and Box Elder County in Utah. Cassia County is most closely linked economically with Minidoka County to the north. The two-county area is called the Mini-Cassia area.

The Mini-Cassia economy was built around agricultural industries, such as livestock (beef and dairy cattle, sheep) and crop production (sugar beets, grains, potatoes, alfalfa, and beans) (Cassia County History 2003). In 2002, Cassia County ranked first among all counties in the state for value of agricultural products sold, second for value of livestock and poultry, and third for value of crops. The same year, Minidoka County ranked second for value of crops, eighth for value of agricultural products sold, and twelfth for value of livestock and poultry (Minidoka County Information 2004). For value of sales in 2002, Cassia County dropped to second (from first rank in 1997) for cattle and calves. In 2002 it ranked third in the grains, oilseeds, dry beans, and dry peas category; and the other

crops and hay category. In 2002, Minidoka County ranked first for sheep and goats, and second for the category of vegetables, melons, potatoes, and sweet potatoes (NASS 2003, 1997).

Today, the Mini-Cassia area economy continues to be centered on agricultural industries such as food processing. Both counties have higher average unemployment rates compared to other southern Idaho counties, in part due to seasonal layoffs typical of the food processing industry. The area has experienced business closures and layoffs in recent years, including: the closure of the original J.R. Simplot potato plant in Heyburn, which resulted in over 600 lost jobs in 2004 (Idaho Statesman 2003); the closure of a Kmart in Burley; and layoffs at other potato plants (Anderson 2003; Idaho Statesman 2003). The retail job losses at Kmart may be countered by an expansion of 200 jobs at the Burley Wal-Mart by mid-2004 (Anderson 2003). On Cotterel Mountain, there are two grazing allotments with 12 permittees within the Proposed Project area (Idaho Watersheds Project 1999).

Labor Force and Employment

In 2003, the Mini-Cassia area labor force of 19,644 workers was 2.8 percent of the State of Idaho labor force. During the period 1980 to 2003, employment in the Mini-Cassia area generally grew slower than total Idaho employment, except for Cassia County employment between 2000 and 2003, which grew at a rate similar to the state rate (Table 3.5-1).

Employment in Minidoka County grew slower than Cassia County's employment from 1980 to 2003. The relatively slower rates are typical of the rural south-central Idaho counties (IDOL 2003c).

Between 1995 and 2003, the annual average unemployment rate for Cassia County was highest in 1995, 1997 and 1998 at 7.1 percent, while the same measure for Minidoka County was highest in 1995 and 1997 at 8.5 percent (IDOL 2003c).

In 2003, unemployment was 6.6 percent in Cassia County and 8.3 percent in Minidoka County. The Mini-Cassia area had more unemployed residents compared to the State of Idaho as a whole, which had 5.4 percent unemployed residents in 2003. The J.R. Simplot plant closure is reflected in the July 2004 unemployment rate in Minidoka County of 9.3 percent (Rogers 2004). The U.S. government has designated both Cassia County and Minidoka counties as Federal Labor Surplus Areas¹ (Rogers 2004).

¹ A county designated a federal Labor Surplus Area has an average unemployment rate of at least 20 percent above the average unemployment rate for all states during the previous two calendar years (USDOL 2003).

Table 3.5-1. Labor Force and Employment for Cassia County, Minidoka County and the State of Idaho.

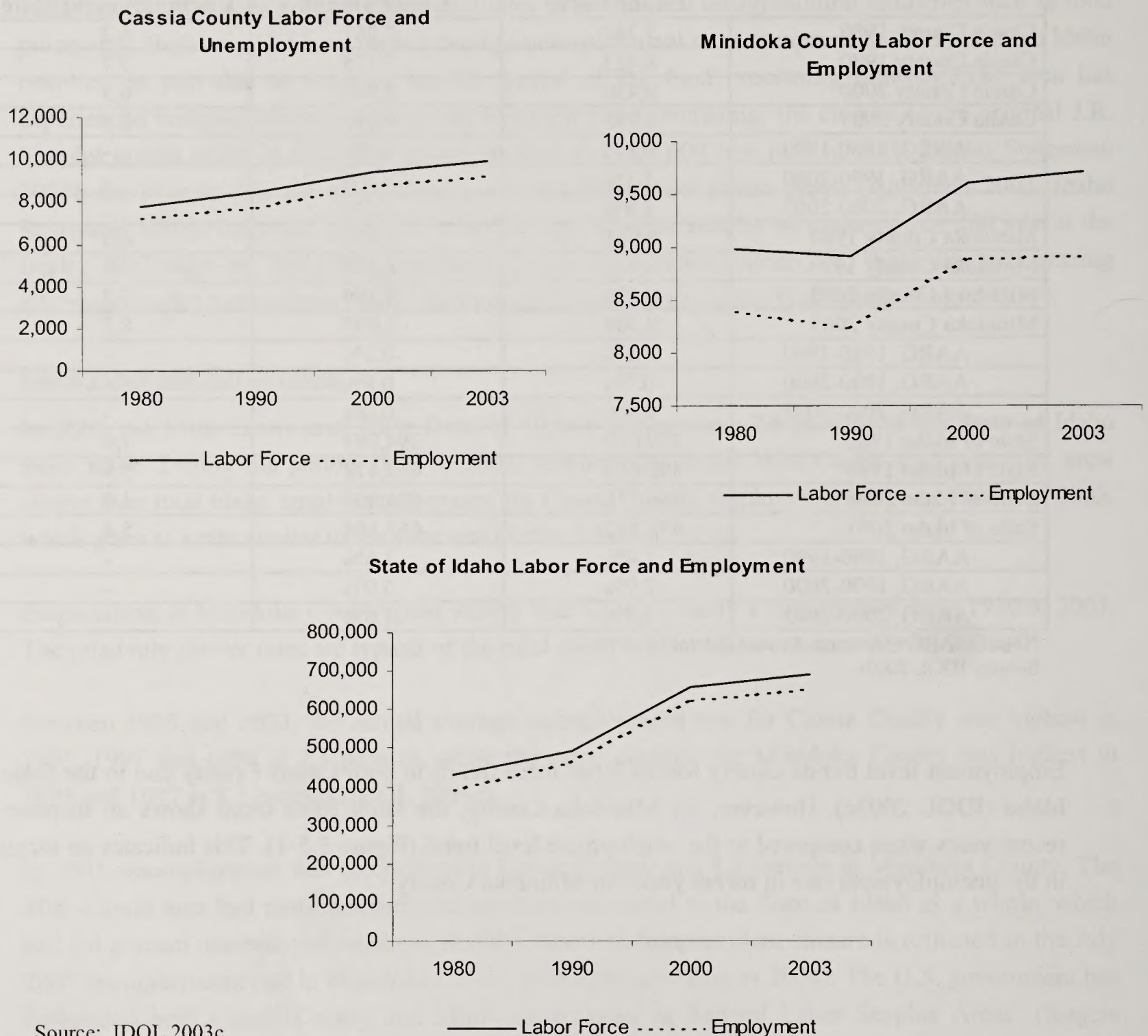
	Labor Force	Employment	Unemployment Rate
Cassia County 1980	7,744	7,267	6.2
Cassia County 1990	8,423	7,775	7.7
Cassia County 2000	9,430	8,840	6.3
Cassia County 2003	9,935	9,276	6.6
AARG, 1980-1990	0.8%	0.7%	-
AARG, 1990-2000	1.1%	1.3%	-
AARG, 2000-2003	1.8%	1.6%	-
Minidoka County 1980	8,981	8,401	6.5
Minidoka County 1990	8,914	8,240	7.5
Minidoka County 2000	9,596	8,899	7.3
Minidoka County 2003	9,709	8,907	8.3
AARG, 1980-1990	-0.1%	-0.2%	-
AARG, 1990-2000	0.7%	0.8%	-
AARG, 2000-2003	0.4%	0.0%	-
State of Idaho 1980	429,010	394,993	7.9
State of Idaho 1990	492,613	463,472	5.9
State of Idaho 2000	656,778	624,806	4.9
State of Idaho 2003	692,552	655,104	5.4
AARG, 1980-1990	1.4%	1.6%	-
AARG, 1990-2000	2.9%	3.0%	-
AARG, 2000-2003	1.8%	1.6%	-

Notes: AARG = Average Annual Rate of Growth.

Source: IDOL 2003c.

Employment level trends closely follow labor force trends in both Cassia County and in the State of Idaho (IDOL 2003c). However, for Minidoka County, the labor force trend shows an increase in recent years when compared to the employment level trend (Figure 3.5-1). This indicates an increase in the unemployment rate in recent years for Minidoka County.

Figure 3.5-1. Labor Force and Employment Trends for Cassia County, Minidoka County, and the State of Idaho.



Industry

Important industries in the Mini-Cassia area include food processing (Ore-Ida and McCain, both potato processors), manufacturing (Boise Cascade Corporation, a manufacturer of cardboard boxes), machinery manufacturing, milk processors, feed mills, commercial livestock feed lots, and gravel and cement processors (Cassia County History 2003).

Most jobs in Cassia County are in retail trade (25%); manufacturing (19%); and agriculture, forestry, fishing and hunting (19%).² Most Minidoka County jobs are in manufacturing (30%) and agriculture, forestry, fishing and hunting (22%). In comparison, jobs in the State of Idaho as a whole are in general more balanced among different industries, with the most jobs in retail trade (16%) and manufacturing (14%) (Table 3.5-2; IDOL 2003b).

Table 3.5-2. Industry Share of Employment, 2002 for Cassia County, Minidoka County and the State of Idaho.

	State of Idaho	Cassia County	Minidoka County
Agriculture, forestry, fishing and hunting	4%	19%	22%
Mining	0%	2%	0%
Utilities	0%	1%	1%
Construction	8%	7%	4%
Manufacturing	14%	19%	30%
Wholesale trade	5%	7%	13%
Retail trade	16%	25%	8%
Transportation and warehousing	3%	7%	5%
Information	2%	2%	3%
Finance and insurance	4%	4%	1%
Real estate and rental and leasing	1%	1%	0%
Professional and technical services	6%	3%	2%
Management of companies and enterprises	2%	0%	0%
Administrative and waste services	7%	0%	0%
Educational services	1%	0%	0%
Health care and social assistance	11%	0%	0%
Arts, entertainment, and recreation	2%	0%	0%
Accommodation and food services	10%	0%	8%
Other services, except public administration	3%	3%	3%
Unclassified	0%	0%	0%
TOTAL	100%	100%	100%

Notes:

ND = Data not disclosed.

N/A = Data not available.

Source: IDOL 2003b.

² Employment in Table 3.5-2 represents jobs within Cassia County or Minidoka County as opposed to residents of Cassia County or Minidoka County who are employed. Table 3.5-1 represents Cassia County and Minidoka County residents who are employed. The difference between these estimates is the number of residents who commute in or out of the respective counties for work.

Table 3.5-3 shows the projected growth by industry for the period 2000 to 2010 in South Central Idaho. The highest rates of projected growth are expected to be in: agriculture, forestry and fishing (7.3%); construction (3.4%); and services (3.1%). Within the construction category, the expected annual growth rates by subcategory are: 3.2 percent for general building contractors, 0.7 percent for heavy construction, and 4.0 percent for special trade contractors. These rates are similar to rates for the State of Idaho as a whole. The growth rate of the electric, gas, and sanitary services industry is expected to grow 0.1 percent faster than in the state as a whole (IDOL 2003d).

Table 3.5-3. Projected Job Growth by Industry 2000-2010 for South Central Idaho Compared to the State of Idaho.

Industry	Estimated Employment 2000	Projected Employment 2010	Annual Average Rate of Projected Growth	Annual Average Rate of Projected Growth, Idaho
Agriculture, Forestry, and Fishing, Total	1,712	2,970	7.3%	3.1%
Mining, Total	156	180	1.5%	-2.5%
Construction, Total	4,723	6,315	3.4%	3.3%
General building contractors	1,450	1,907	3.2%	3.2%
Heavy construction, except building	536	576	0.7%	0.8%
Special trade contractors	2,737	3,832	4.0%	4.0%
Manufacturing, Total	8,595	9,163	0.7%	1.7%
Transportation and Public Utilities	4,250	5,059	1.9%	1.6%
Transportation, Total	3,089	3,744	2.1%	1.7%
Communications	476	565	1.9%	1.8%
Electric, gas, and sanitary services	685	750	0.9%	0.8%
Communications and Utilities, Total	1,161	1,315	1.3%	1.4%
Wholesale and Retail Trade, Total	17,952	22,462	2.5%	2.5%
Finance, Insurance, and Real Estate, Total	2,242	2,775	2.4%	2.6%
Services, Total	18,405	24,155	3.1%	2.9%
TOTAL	58,035	73,079	2.6%	2.6%

Source: IDOL 2003d.

Tourism and Recreation

Most jobs in the tourism and recreation industry are in retail trade, services, or local government, three industries with notable representation in the Mini-Cassia Area. Tourism and recreation resources in the county include public land for hunting, fishing, hiking, climbing, camping, horseback riding, bicycling, and scenic viewing. The Snake River is located north of the Proposed Project area, dividing Cassia County and Minidoka County, and provides boating, boat racing, water skiing, and fishing opportunities. Pomerelle Mountain Resort on Mt. Harrison, west of the Proposed Project area, provides snow skiing and snowmobiling areas. It is located to the southwest of the Proposed Project area and serves all of southeast Idaho. The City of Rocks National Reserve, Cache Peak, and

Independence Peak are hiking and climbing areas located southwest of the Proposed Project area. A section of the Sawtooth National Forest including Mt. Harrison and Lake Cleveland is located in Cassia County (Cassia County History 2003).

The City of Burley has a golf course, and parks with softball, swimming, tennis, soccer and boating facilities. Private facilities in Burley also include a golf course, bowling, health club, and racquetball facilities. Other towns in Cassia County also have parks and softball facilities. Other tourist attractions in Burley include the Cassia County Museum and the Cassia County Fair and Rodeo.

Recreational activities that take place at Cotterel Mountain and near the Proposed Project area include dispersed hiking, hunting, wildlife viewing, OHV riding, and hang-gliding. Public access to Cotterel Mountain is limited, especially on upper roads. No designated or maintained hiking trails exist in the Proposed Project area. Picnic areas accessible in dry weather include a small picnic area west of the radio tower at Coe Creek, and McClendon Springs, which is an improved picnic site with wildlife and plant viewing opportunities. McClendon Springs is located on the east side of Cotterel Mountain near Malta, and is maintained by BLM. This area has riparian habitat for migratory songbirds because livestock are fenced out of this location, which increases opportunities for wildlife watching (Idaho Watersheds Project 1999).

In 1997, travel and tourism spending in south central Idaho³ was approximately \$135 million and was associated with 2,122 jobs (Dean Runyan Associates 2003). The Mini-Cassia portion of this economic impact was \$36.4 million in spending and 550 jobs. These travel and tourism jobs represented three percent of the total jobs in the Mini-Cassia area that year.

Income

Median household income in Cassia County was \$33,322 in 1999, representing 88 percent of the State of Idaho median household income, and 94 percent of the median household income of South Central Idaho as a whole. The median household income of Minidoka County of \$32,021 in 1999 represented 85 percent of the State of Idaho and 90 percent of South Central Idaho median household income for the same year (Census 2000d). Per capita personal income in Cassia County was \$22,121 and \$17,823 in Minidoka County in 2001 (IDOL 2003a), compared to \$24,506 in the State of Idaho as a whole. The relatively lower income levels can be typical of a rural area that has not had recent strong economic growth.

Table 3.5-4 shows annual covered wages and percentage of total wages by industry in 2000 for Cassia County, Minidoka County, and the State of Idaho. The industries with percentages of total wages over 15 percent in Cassia County were manufacturing (23%), retail trade (20%) and agriculture, forestry, fishing and hunting (16%). In Minidoka County, the manufacturing industry represents 42 percent of

³ Dean Runyan Associates (Dean Runyan Associates 2003) included Cassia, Gooding, Jerome, Lincoln, Minidoka, and Twin Falls counties in "south central Idaho" for the purpose of their estimates.

wages, and agriculture, forestry, fishing and hunting represents 17 percent of wages. Manufacturing wages are relatively higher than retail trade wages as shown by comparing the industry share to wages by industry.

Table 3.5-4. Annual Covered Wages and Percentage of Total Wages, 2002 (\$1,000s) for Cassia County, Minidoka County and the State of Idaho.

	State of Idaho	% of Total	Cassia County	% of Total	Minidoka County	% of Total
Agriculture, forestry, fishing and hunting	438,450	3%	21,317	16%	23,384	17%
Mining	70,349	1%	3,195	2%	---	0%
Utilities	131,452	1%	1,701	1%	2,186	2%
Construction	1,132,450	9%	12,621	9%	5,828	4%
Manufacturing	2,478,592	19%	30,144	23%	57,787	42%
Wholesale trade	861,499	7%	9,186	7%	17,856	13%
Retail trade	1,488,232	12%	26,287	20%	9,040	7%
Transportation and warehousing	421,525	3%	11,347	8%	5,919	4%
Information	305,019	2%	3,604	3%	3,416	2%
Finance and insurance	653,383	5%	6,695	5%	1,783	1%
Real Estate and rental and leasing	139,113	1%	620	0%	431	0%
Professional and technical services	1,210,010	9%	3,585	3%	2,039	1%
Management of companies and enterprises	480,620	4%	(ND)	0%	(ND)	0%
Administrative and waste services	590,804	5%	(ND)	0%	(ND)	0%
Educational services	106,860	1%	(ND)	0%	(ND)	0%
Health care and social assistance	1,515,284	12%	(ND)	0%	(ND)	0%
Arts, entertainment, and recreation	135,843	1%	(ND)	0%	207	0%
Accommodation and food services	474,066	4%	(ND)	0%	4,449	3%
Other services, except public administration	287,383	2%	3,228	2%	2,300	2%
Unclassified	8,816	0%	N/A	0%	25	0%
Total	12,929,750	100%	133,530	100%	136,650	100%

ND = Not disclosed by BLS.

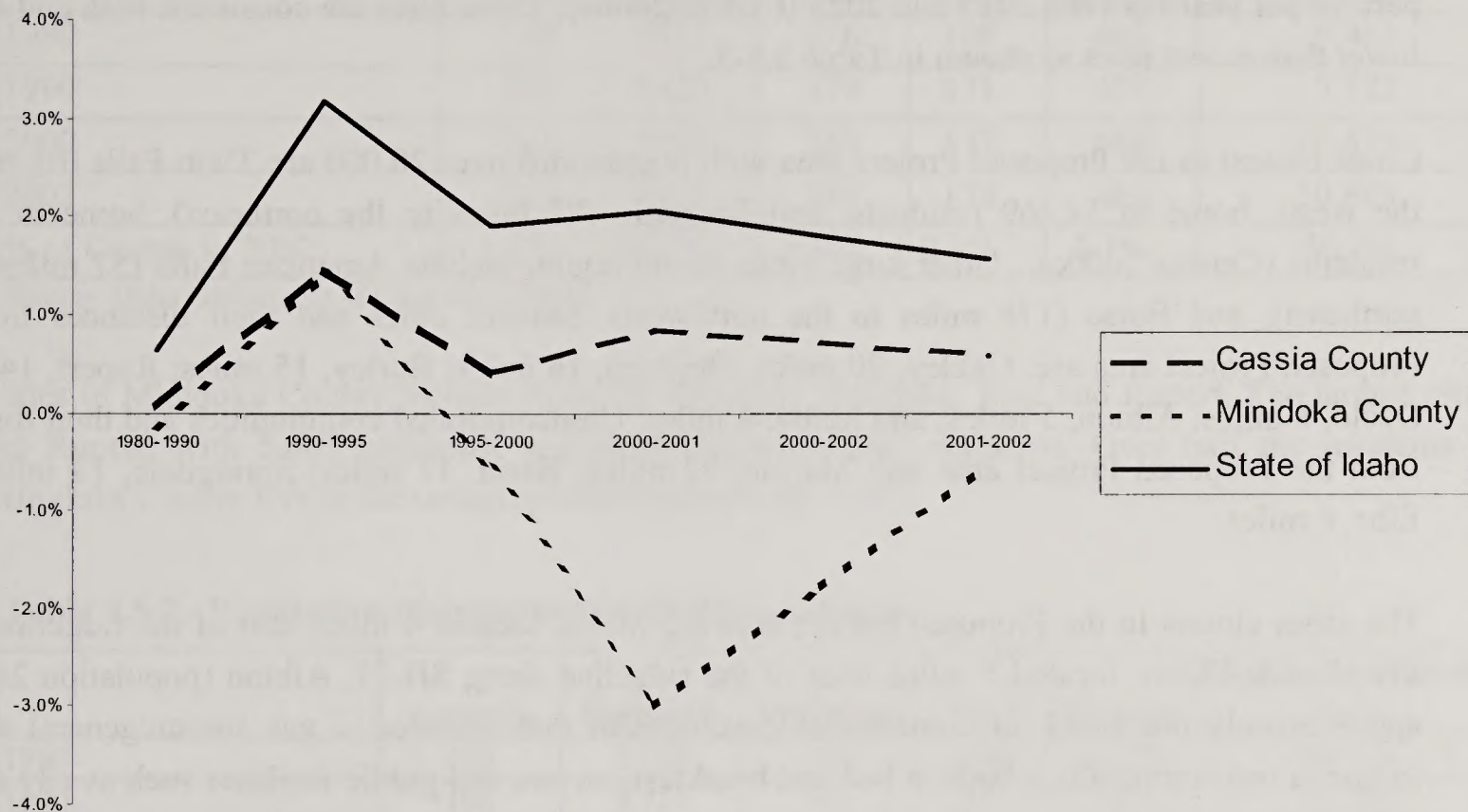
N/A = Data not available.

Source: IDOL 2003b.

3.5.3 Population, Housing and Property Values

Population

Table 3.5-5 and Figure 3.5-2 show the population trends in Cassia County, Minidoka County and the State of Idaho. In 2002, Cassia County had a population of 21,720 and Minidoka County had a population of 19,465; together representing three percent of the State of Idaho population (IDOL 2003a). In recent years, the population of the Mini-Cassia area has grown more slowly than the population of the state. From 1980 to 2001, the population of Cassia County grew between 0.1 and 1.5 percent per year, while the total population of the state grew between 0.6 and 3.2 percent per year (IDOL 2003a; Cassia County 2003a). From 1980 to 2001, the population of Minidoka County has been decreasing, except during the early 1990s (IDOL 2003a; Table 3.5-5). Population decreases in the Mini-Cassia area may be caused by the high unemployment rate and relatively slow economic growth.

Figure 3.5-2. Annual Average Rates of Population Growth in Cassia County, Minidoka County and the State of Idaho.**Table 3.5-5. Population Trends in Cassia County, Minidoka County and the State of Idaho.**

	Cassia County	Minidoka County	Idaho	Mini-Cassia Percent of State Population
Population				
1980	19,427	19,718	943,935	4%
1990	19,532	19,361	1,006,734	4%
1995	20,996	20,759	1,177,322	4%
2000	21,416	20,174	1,293,953	3%
2001	21,595	19,569	1,320,585	3%
2002	21,720	19,465	1,341,131	3%
Annual Average Rates of Population Growth				
AARG, 1980-1990	0.1%	-0.2%	0.6%	N/A
AARG, 1990-1995	1.5%	1.4%	3.2%	N/A
AARG, 1995-2000	0.4%	-0.6%	1.9%	N/A
AARG, 2000-2001	0.8%	-3.0%	2.1%	N/A
AARG, 2000-2002	0.7%	-1.8%	1.8%	N/A
AARG, 2001-2002	0.6%	-0.5%	1.6%	N/A

AARG = Annual average rate of growth

N/A = Data not available.

Source: IDOL 2003a

Forecasts of county-level population in the State of Idaho were not available at the time this report was written. However, the U.S. Census predicted in 2000 that the State of Idaho would grow by approximately two percent per year (on average) between 2000 and 2015, and by approximately one percent per year between 2015 and 2025 (Census 2000c). These rates are consistent with and slightly lower than recent rates as shown in Table 3.5-5.

Cities closest to the Proposed Project area with populations over 20,000 are Twin Falls (61 miles to the west), home to 34,469 residents, and Pocatello (82 miles to the northeast), home to 51,466 residents (Census 2000c). Other large cities in the region include American Falls (57 miles to the northeast), and Boise (178 miles to the northwest). Smaller cities and their distances from the Proposed Project area are: Oakley, 20 miles; Heyburn, 16 miles; Burley, 15 miles; Rupert, 14 miles; Declo, 8 miles; Albion, 5 miles; and Malta, 4 miles. Unincorporated communities and their distances from the Proposed Project area are: Marion, 22 miles; Basin, 17 miles; Springdale, 13 miles; and Elba, 6 miles.

The cities closest to the Proposed Project area are Malta, located 4 miles east of the ridgeline along SH-81 and Albion, located 5 miles west of the ridgeline along SH-77. Albion (population 262) has approximately one block of commercial development that includes: a gas station/general store, a saloon, a restaurant/café, a bank, a bed and breakfast, an inn, and public facilities such as city offices, a fire department, a grange hall, and an elementary school. A few residential streets are located south and east of the commercial block. Other homes are located in unincorporated Cassia County, on roads leading away from Albion. Albion also has some historic structures. Malta (population 177) consists of approximately ten square blocks of residential uses, along with two motels, two restaurants, a high school, an elementary school, a junior high school, a post office, a fuel depot and store, a gift shop, a gas station, and a grocery store. Similar to Albion, homes are located along roads leading away from Malta, outside of the city limits.

The largest city within 50 miles of the Proposed Project area is Burley, with 9,074 residents (Idaho Department of Commerce 2003a). It is located 15 miles northwest of the Proposed Project area. Burley is the county seat, the largest city in Cassia County, and the home of 42 percent of the county population. The unincorporated Cassia County area is home to over half the county population (Table 3.5-6; Idaho Department of Commerce 2003a). Cities in Cassia County had near-zero percent population growth between 1980 and 2000. Only the unincorporated area and the City of Declo had annual average growth rates in population greater than zero, for both 5-year periods 1990 to 1995, and 1995 to 2000.

Table 3.5-6. Population Distribution in Cassia County.

	Albion	Burley	Declo	Malta	Oakley	Unincorporated Area
1980	286	8525	276	196	663	9,481
1990	305	8420	279	171	635	9,722
2000	262	9316	338	177	668	10,655
2002	264	9375	339	178	669	10,895
% of County in 2002	1.2%	43.2%	1.6%	0.8%	3.1%	50.2%

Source: Idaho Department of Commerce 2003a.

Cities in Minidoka County include Acequia, Heyburn, Minidoka, Paul and Rupert. The largest cities are Rupert, with 5,402 residents, and Heyburn, with 2,805 residents. Over half the residents of Minidoka County live in the unincorporated area (Table 3.5-7).

Table 3.5-7. Population Distribution in Minidoka County.

	Acequia	Heyburn	Minidoka	Paul	Rupert	Unincorporated Area
1980	100	2,889	101	940	5,476	10,212
1990	106	2,714	67	901	5,455	10,118
2000	144	2,899	129	998	5,645	10,359
2002	139	2,805	123	971	5,402	10,025
% of County in 2002	0.7%	14.4%	0.6%	5.0%	27.8%	51.5%

Source: Idaho Department of Commerce 2003a.

No known residences are located within 2 miles of the Proposed Project area. The closest house to the Proposed Project area is approximately 2.5 miles from the proposed west string. Approximately 80 homes exist along SH-77 or SH-81, outside of the towns of Albion and Malta, but within view of the Proposed Project.

3.5.4 Housing and Property Values

Units, Vacancy and Types of Housing

The Mini-Cassia area had approximately 15,360 housing units in 2000, representing three percent of total housing units in the State of Idaho. Mini-Cassia area housing units were seven to ten percent vacant that year, compared to 11 percent for the State of Idaho as a whole, indicating a slightly tighter real estate market when compared to the state average. Although the Mini-Cassia area is generally healthier (in terms of fewer vacant units) than other areas in the State of Idaho, the vacancy rate in the area is on par with the national average of nine percent. In 2000, 68 percent of the total housing units in the Mini-Cassia area were owner-occupied, and 90 percent of housing units were built prior to 1988. New development has not been common in recent years in the Mini-Cassia area.

The breakdown of housing units by type in 2000 (Table 3.5-8) indicates that 72 percent of the units in Cassia County were single-family, and approximately 17 percent were mobile homes, boats, RVs or

other types of housing units. In Minidoka County, 78 percent of units were single-family and 12 percent were mobile homes, boats, RVs or other types of housing units. Compared to the State of Idaho, the Mini-Cassia area has more mobile homes and single-family homes relative to multi-family homes. However, more mobile homes are vacant in the Mini-Cassia area when compared to the state.

Table 3.5-8. Housing Types and Characteristics, 2000 in Cassia County, Minidoka County and the State of Idaho.

	Total Units	% of Total	Vacant Units	% of Total	Owner Occ'd. Units	% of Total	Renter Occ'd. Units	% of Total
Cassia County	7,862	---	802	---	5,125	---	1,935	---
Single family	5,690	72%	438	55%	4,195	82%	1,057	55%
Multi-family	837	11%	143	18%	107	2%	587	30%
Mobile homes	1,275	16%	199	25%	785	15%	291	15%
Other (RVs, boats, etc.)	60	1%	22	3%	38	1%	0	0%
Minidoka County	7,498	---	525	---	5,360	---	1,613	---
Single family	5,861	78%	278	53%	4,666	87%	917	57%
Multi-family	693	9%	141	27%	49	1%	503	31%
Mobile homes	934	12%	106	20%	642	12%	186	12%
Other (RVs, boats, etc.)	10	0%	0	0%	3	0%	7	0%
State of Idaho	527,824	---	58,179	---	339,913	---	129,732	---
Single family	369,924	70%	35,493	61%	285,977	84%	48,454	37%
Multi-family	91,004	17%	12,328	21%	10,838	3%	67,838	52%
Mobile homes	64,163	12%	8,852	15%	42,081	12%	13,230	10%
Other (RVs, boats, etc.)	2,733	1%	1,506	3%	1,017	0%	210	0%

Source: Census 2000f.

Housing Values and Rents

The median value of housing in Minidoka County was \$74,600 (Census 2000f) in 2000; this is 30 percent lower than the median value of housing for Idaho as a whole. The median value of housing in Cassia County was \$53,100 (Census 2000f) in 2000; this is 22 percent lower than the median value of housing for Idaho as a whole (Table 3.5-9).

Table 3.5-9. Median Housing Values in Cassia County, Minidoka County and the State of Idaho in 2000.

Area	Median Housing Value, 1990	Median Housing Value, 2000	Percentage Increase, 1990 to 2000
Minidoka County	\$41,500	\$74,600	79.8%
Cassia County	\$46,000	\$83,100	80.7%
State of Idaho	\$58,000	\$106,300	83.3%

Source: Census 2000f.

Median rent in Cassia County doubled to \$403 per month between 1990 and 2000. Minidoka County median rent also doubled to \$394 in 2000. The median rent was \$413 in 2000 throughout the State of Idaho (Census 2000d). The lower housing values and rents in the Mini-Cassia area suggest a relaxed housing market in contrast to the relatively low vacancy rate.

On Friday June 6, 2003, eight single-family homes, one manufactured home, and parcels for manufactured homes were listed for sale in the South Idaho Press. Four of the eight single family homes were listed with prices that ranged from \$51,000 to \$75,000.⁴ Locations for three of the single-family homes were listed as one in Burley and two in Heyburn. The paper also listed over twelve apartments for rent ranging from \$250 to \$425 per month. Over 17 homes were listed for rent in Rupert, Heyburn, Burley, Paul, and Declo from \$325 to \$650. Prices and locations were not included in all listings (South Idaho Press 2003).

According to local real estate agents, new construction in the Mini-Cassia area included homes priced from \$160,000 to \$185,000 for 1,500 to 1,800 square feet for single-family homes, and custom-built single-family homes priced up to \$500,000 (McCall 2003; Anderson 2003). Custom-built homes are typically under construction outside of Burley, while lower-priced new homes ranging in price from \$85,000 to \$100,000 are under construction within Burley city limits. The housing market in the Mini-Cassia area is generally stable and steady, with few highs and lows, and has been this way for several decades. In the future, local agents expect the market to remain steady, and for more homes in the \$75,000 to \$85,000 range to enter the market (McCall 2003; Anderson 2003). In 2000, 90 percent of existing housing units in the Mini-Cassia area were built prior to 1988.

Temporary Lodging

At least 972 lodging rooms in hotels or motels exist within 60 miles of the Proposed Project area (Table 3.5-10). Assuming a summer vacancy rate of 15 percent on average (weekends and weekdays), approximately 150 rooms would be available at one time.

Campgrounds and RV parks near the Proposed Project area include:

- Heyburn Riverside RV Park in Heyburn;
- Willow Bay Recreation Area, and Indian Springs Swimming and RV in American Falls;
- KOA Campground in Jerome;
- Budget RV Park in Pocatello; and
- Central Idaho 4-H Camp, Oregon Trails Campgrounds Center, Curry Trailer Park, and Nat Soo Pah Hot Springs and RV in Twin Falls (Idaho Lodging 2003).

⁴ The other four listings did not include price.

Table 3.5-10. Temporary Lodging Near the Proposed Project Area.

Name and Location	City/Town	Miles from Albion, Idaho	No. of Rooms
Marsh Creek Inn	Albion	0	12
Best Western Burley Inn & Convention Ctr.	Burley	18	126
Budget Motel of Burley	Burley	18	139
East Park Motel	Burley	18	12
Lampliter Motel	Burley	18	16
Evergreen Motel	Burley	18	13
Parish Motel	Burley	18	15
Powers Motel	Burley	18	23
Starlite Motel & Taxi	Burley	18	9
Super 8	Heyburn	20	68
Tops Motel	Heyburn	20	16
Flamingo Lodge Motel	Rupert	18	15
Hillview	American Falls	57	33
Amber Inn Motel	Eden	44	25
AmeriTel Inn	Twin Falls	57	118
Best Western Apollo Motor Inn	Twin Falls	57	50
Capri Motel	Twin Falls	57	23
Comfort Inn	Twin Falls	57	52
El Rancho Motel	Twin Falls	57	14
Holiday Motel	Twin Falls	57	18
Holiday Inn Express	Twin Falls	57	59
Monterey Motor Inn	Twin Falls	57	28
Motel 6	Twin Falls	57	132
Red Lion Canyon Springs	Twin Falls	57	112
Shilo Inn - Twin Falls	Twin Falls	57	128
Super 7 Motel	Twin Falls	57	40
Super 8 Motel Twin Falls	Twin Falls	57	93
Twin Falls Motel	Twin Falls	57	8
Weston Inn	Twin Falls	57	97
Estimated Number of Rooms Within 60 miles			972

Source: URS 2003.

3.5.5 Public Finance and Fiscal Conditions

The State of Idaho collects property tax, sales tax, and personal and corporate income tax from its residents. The Idaho State Tax Commission collects the income and sales taxes, and counties collect property taxes. The taxing of property within Cassia County funds county operations. Taxes that would apply directly to Proposed Project construction and operation include property and sales taxes.

Property Tax

Cassia County would benefit from tax revenue attributable to the Proposed Project because the Proposed Project site is within the County. Tax impacts are discussed in Chapter 4, Environmental Consequences.

The 2002-2003 budget for Cassia County was \$11.4 million (Cassia County 2003a). Of this amount, \$2.9 million (25%) was from annual property tax revenue. Almost half of property tax revenue was allocated to the Justice Fund (i.e., law enforcement needs), while approximately one-fifth was allocated to the Current Expense Fund (Table 3.5-11). Other funds each received less than ten percent of tax revenue.

The 2003 average property tax rates for the State of Idaho were 1.67 percent for urban areas, and 1.17 percent for rural areas. For Cassia County, the urban area average rate was 1.56 percent, slightly lower than the state urban average rate, while the Cassia County rural rate average was 1.17 percent, which was the same as the state rural average rate (Holland 2003).

Table 3.5-11. Cassia County Distribution of Property Tax Revenue from the 2002-2003 Adopted Budget.

Fund	Amount	Percent of Total
Justice Fund	\$1,407,350	48.9%
Current Expense Fund	\$614,580	21.4%
Jail Bond	\$250,000	8.7%
Indigent Fund	\$186,760	6.5%
Junior College Fund	\$129,560	4.5%
Weed and Pest Fund	\$82,000	2.8%
Re Evaluation	\$66,250	2.3%
Ambulance Services Fund	\$58,000	2.0%
Fair Exhibits	\$57,000	2.0%
Co. Roads (Unorg.) Fund	\$16,480	0.6%
Historical Society	\$10,400	0.4%
Total	\$2,878,380	100.0%

Source: Cassia County 2003a.

Table 3.5-12 shows the Cassia County taxable assessed value in 2001 was \$210.8 million (Cassia County 2003b). The Proposed Project is located within Tax Code Areas 16 and 17 (ITC 2003a), which are taxed at 1.2 percent.

Over half of the tax revenue collected from Tax Code Areas 16 and 17 funds Cassia Joint School District No. 151, which serves most of Cassia County and portions of Oneida and Twin Falls counties (Table 3.5-12). Cassia Joint School District includes 16 schools and over 5,000 students (Cassia Joint School District 2003). The property tax revenues represent 21 percent of total funding for school operations. Remaining funding is provided by state tax revenues (65%) and federal funds (14%) (Cassia Joint School District 2003).

Table 3.5-12. Property Tax Rates in Tax Code Areas 16 and 17.

Taxing District	Tax Code Area 16 Rate	Tax Code Area 17 Rate
School Dist. 151	0.644%	0.644%
County	0.315%	0.315%
Raft River Hwy	0.194%	0.194%
Flood District 15	0.043%	0.043%
Raft River Fire	0.014%	0.014%
Valley Vu Cemetery	0.007%	0.000%
TOTAL	1.218%	1.211%

Source: Cassia County 2003b.

Retail Sales Tax

Retail sales in Cassia County in 1997 accounted for \$193 million (Cassia County 2003b). This represented 1.7 percent of total retail sales in the State of Idaho, and resulted in a ranking of 15 out of 44 counties in the State of Idaho (Census 1997). From 1993 to 2002, retail sales in Cassia County grew at rates ranging from four to 11 percent per year, and represented one percent of the total retail sales in the State of Idaho (Idaho Department of Commerce 2003b).

Sales taxes apply to the sale, rental, or lease of tangible personal property, and some services. The Idaho sales tax rate was increased from five to six percent on May 1, 2003 (Poplar 2003). Based on \$193 million in retail sales in 1997 in Cassia County (Cassia County 2003b), sales tax revenue collected that year would have been approximately \$9.7 million.

Social Values

Rural communities tend to be characterized by social and lifestyle patterns that are distinct from their metropolitan counterparts. Smaller rural communities are often characterized by a high level of what social scientists call social cohesiveness. Cohesiveness refers to the forces or attractions that hold members of a community together, and is based on the quality of social life within the community, and an important emphasis on a sense of place and togetherness. An impact that may decrease the attractiveness of the community itself, or the desirability of associating with, or identifying with the community may have a detrimental effect on the level of cohesion and the corresponding sense of community (Finsterbusch 1980). Social values in the Mini-Cassia area are likely rooted in a strong social cohesiveness, along with a high regard for agriculture and its related industries. In addition, the Mini-Cassia area contains vast open spaces with remote, mountainous terrain. Residents also likely value these natural settings and the recreational opportunities afforded by them.

3.5.6 Environmental Justice

Executive Order 12898 (1998) requires that federal agencies address high and disproportionate environmental impacts on minority and low-income populations ("environmental justice" impacts) attributable to projects proposed on federal land. Environmental justice impacts would result if potentially high and adverse environmental impacts attributable to the Proposed Project would fall

disproportionately on minority or low-income populations. The first step of an environmental justice analysis involves screening the Proposed Project area to determine if environmental justice populations exist in the area. The second step (addressed in Chapter 4) is to determine whether Proposed Project impacts would be high, and if they would disproportionately affect any environmental justice populations.

Minority Populations

The U.S. Census classifies 21 percent of the population of Cassia County and 28 percent of the population in Minidoka County as a racial minority, compared to 17 percent in the South Central Idaho region^{5,6} (Census 2000a). The State of Idaho as a whole was 12 percent minority in 2000. The Mini-Cassia area population was 24 percent minority on average and more racially diverse than South Central Idaho and the state as a whole (Table 3.5-13).

Census blocks are the smallest geographic units used in compiling the decennial U.S. Census. The decennial census has always reported population by state and county, and in the latter half of the twentieth century added the concepts of the census tract, the block group, and the census block to its spatial subdivision of the nation. The census block, normally used only in urbanized areas, is an actual physical block or other spatial unit within the census tract. The census block *group* combines, on average, about four census blocks to comprise approximately 1,500 persons and normally represents a residential subdivision or other reasonable geographic entity. The populations of these spatial units can vary widely, and may even have a population of zero (Census 1994).

The Proposed Project area is located within five designated census blocks within Census Tract 9501 (Table 3.5-13). Two of the five census blocks have no population. The remaining three census blocks contain a combined population of 48, of which 4 residents are listed as minority residents (Census 2000a). These four minority residents live within census block 2000, which covers the northern end of the proposed turbine strings.

⁵ Minority populations include Hispanic, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, & other non-white races.

⁶ This report uses the definition for the South Central Region of Idaho used by the IDOL. The South Central Region of Idaho includes the counties of Cassia, Minidoka, Blaine, Camas, Gooding, Jerome, Lincoln, and Twin Falls.

Table 3.5-13. Minority Populations in the South Central Region of Idaho.

Geographic Area	Population	Minority Population^(a)	Percentage of Total
Census Tract 9501 and Census Block 2000	20	4	20%
Census Tract 9501 and Census Block 2014	0	0	N/A
Census Tract 9501 and Census Block 2015	2	0	0%
Census Tract 9501 and Census Block 2245	0	0	N/A
Census Tract 9501 and Census Block 2246	26	0	0%
Cassia County	21,416	4,434	21%
Minidoka County	20,174	5,622	28%
Mini-Cassia area	41,590	10,056	24%
Blaine County	18,991	2,460	13%
Camas County	991	81	8%
Gooding County	14,155	2,782	20%
Jerome County	18,342	3,551	19%
Lincoln County	4,044	669	17%
Twin Falls County	64,284	7,894	12%
South Central Idaho ^(b)	162,397	27,493	17%
State of Idaho	1,293,953	154,662	12%

Note:

- (a) Minority populations include Hispanic, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and other non-white races.
- (b) This report uses the definition for the South Central Region of Idaho used by the IDOL. The South Central Region of Idaho includes the counties of Cassia, Minidoka, Blaine, Camas, Gooding, Jerome, Lincoln, and Twin Falls.

Source: Census 2000a.

Low Income Populations

Fourteen percent of Cassia County residents and 15 percent of Minidoka County residents lived below the poverty level in 1999 (Table 3.5-14). In comparison, 13 percent of residents in South Central Idaho lived below the poverty level, and 12 percent of Idaho residents lived below the poverty level in 1999 (Census 2000b). That year, the Mini-Cassia area had slightly more residents living in poverty (14%, on average) when compared to South Central Idaho and the State of Idaho.

In census block group 2 within census tract 9501 (which surrounds the Proposed Project), relatively fewer residents live below the poverty level (10%, Table 3.5-14).

Table 3.5-14. Populations Living Below Poverty Level, 1999 in the South Central Region of Idaho.

Geographic Area	Population for Whom Poverty Status Is Determined	Population Living Below Poverty Level	Percentage of Total
CT 9501 CBG 2	1,280	134	10%
Cassia County	21,109	2,875	14%
Minidoka County	19,992	2,960	15%
Mini-Cassia area	41,101	5,835	14%
Blaine County	18,868	1,469	8%
Camas County	985	82	8%
Gooding County	13,916	1,922	14%
Jerome County	18,235	2,526	14%
Lincoln County	3,995	522	13%
Twin Falls County	63,123	8,038	13%
South Central Idaho ^(a)	160,223	20,394	13%
State of Idaho	1,263,205	148,732	12%

Notes:

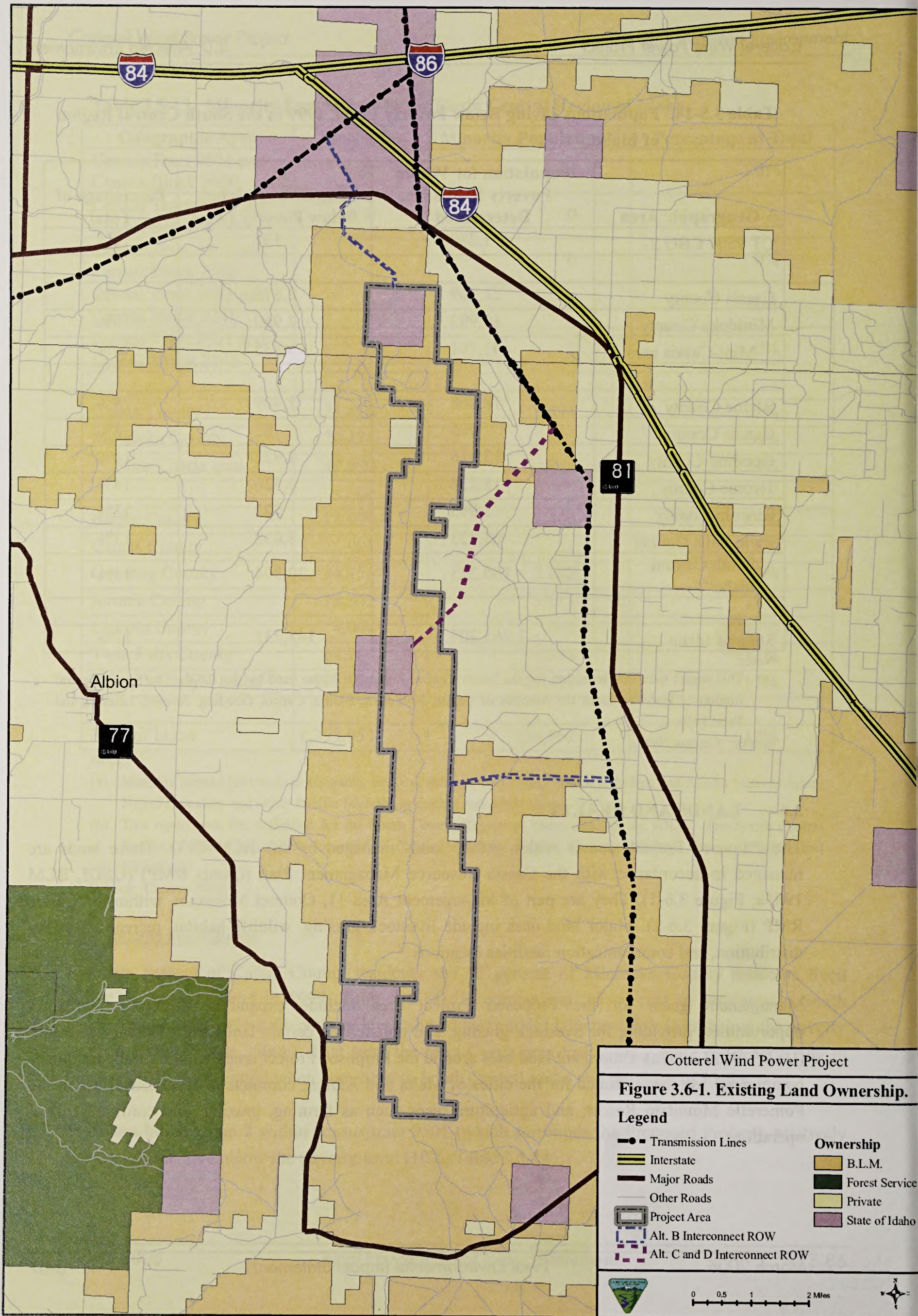
- (a) This report uses the definition for the South Central Region of Idaho used by the IDOL. The South Central Region of Idaho includes the counties of Cassia, Minidoka, Blaine, Camas, Gooding, Jerome, Lincoln, and Twin Falls.

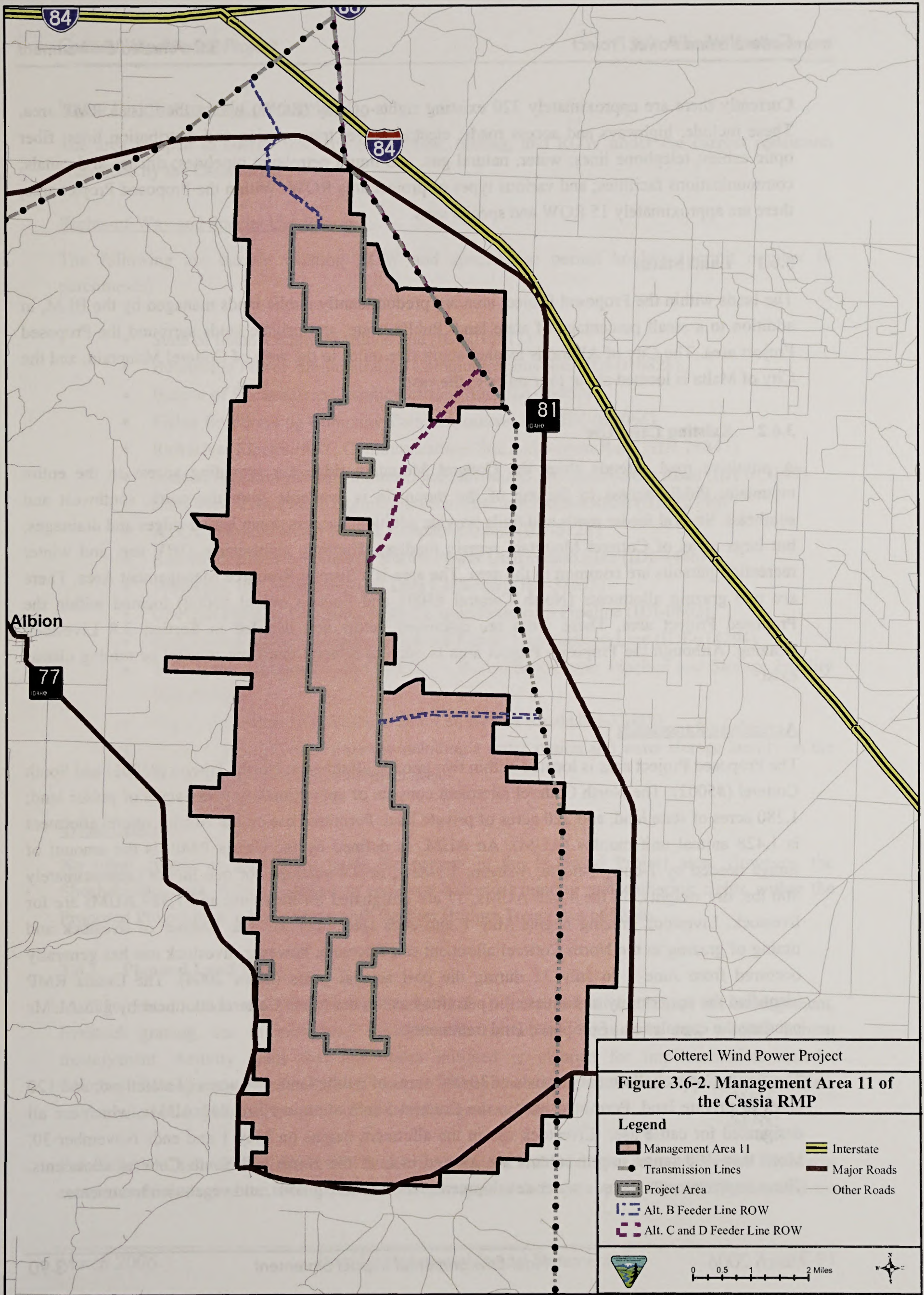
Source: Census 2000b.

3.6 LANDS AND REALTY

The Proposed Project area is within public lands managed by the BLM BFO. These lands are managed in accordance with the Cassia Resource Management Plan (Cassia RMP) (USDI, BLM 1985a; Figure 3.6-1). They are part of Management Area 11, Cotterel Mountain, within the Cassia RMP (Figure 3.6-2). Major land uses include livestock grazing, wildlife habitat, recreation, utility distribution, and communication facilities locations.

Management goals for the Proposed Project area include expanding dispersed recreation opportunities, providing for livestock grazing, and transferring certain lands from federal ownership (USDI, BLM 1985a). Prominent land uses around the Proposed Project area include: rural community commercial use that is zoned for the cities of Malta and Albion; commercial recreational use at the Pomerelle Mountain Resort; and agricultural uses such as farming, grazing, and confined animal operations.





Currently there are approximately 320 existing rights-of-way (ROW) within the Cassia RMP area. These include: highways and access roads; electric power transmission and distribution lines; fiber optic cables; telephone lines; water, natural gas, and liquid petroleum pipelines; ditches and canals; communications facilities; and various types of project area ROW. Within the Proposed Project area, there are approximately 15 ROW and special uses.

3.6.1 Land Status

The lands within the Proposed Project area are predominantly public lands managed by the BLM, in addition to a small percentage of state land. Public, state, and private lands surround the Proposed Project area. The City of Albion is located about five miles to the west of Cotterel Mountain, and the City of Malta is located about four miles to the east.

3.6.2 Existing Land Use

A primitive road extends along the Cotterel Mountain ridge top providing access to the entire mountain. Public access to the top of the mountain is available from the north, southwest and southeast. Several feeder roads and trails provide additional access down lateral ridges and drainages, but large areas of Cotterel Mountain remain roadless. Hunting, sightseeing, OHV use, and winter recreation pursuits are common in the area. The area is a Special Resource Management Area. There are two grazing allotments (North Cotterel #5001 and South Cotterel #5002) located within the Proposed Project area. These areas are discussed below and detailed in Section 3.8 Livestock Grazing. Although the Proposed Project area is open to mineral entry, no mineral or mining claims exist.

Agriculture/Rangelands

The Proposed Project area is located within two grazing allotments: North Cotterel (#5001) and South Cotterel (#5002). The North Cotterel allotment consists of approximately 9,981 acres of public land; 1,280 acres of state land, and 320 acres of private land. Permitted use on the North Cotterel allotment is 1,428 animal unit months (AUM). An AUM, as defined by the Cassia RMP, is the amount of forage needed by 1-cow, 1-horse, 5-sheep, 5.3-deer, or 9.4-antelope for one month (approximately 800 lbs. dry weight). Of the 1,428 AUMs, 37 are designated for horse use and 1,389 AUMs are for livestock. Livestock grazing begins May 1 and ends December 27. The number of livestock and timing of grazing in the North Cotterel allotment can fluctuate; however, livestock use has generally occurred from June 1 to July 31 during the past several years (Shaw 2004). The Cassia RMP identified the opportunity to increase the permitted use in the North Cotterel allotment by 275 AUMs pending the completion of proposed land treatments.

The South Cotterel allotment consists of 30,007 acres of public land, 640 acres of state land, and 120 acres of private land. Permitted use on the Cotterel South allotment is 3,242 AUMs, which are all designated for cattle use. Livestock use in the allotment begins on May 1 and ends November 30. More than 100 range improvements are located in both the North and South Cotterel allotments. These improvements include water development, fences, cattle guards, and vegetation treatments.

Utility Distribution and Commercial Use

The area is open to energy resource exploration, mining, and ROW under the current restriction prescribed by the Cassia RMP.

Rights-of-Way and Special Use Permits

The following are current existing ROW and special use permit holders (permit number in parentheses).

- State of Idaho Communications Site (IDI-016817)
- Bonneville Power Administration Communications Site (IDI-016828)
- Bureau of Reclamation Communications Site (IDI-16460)
- Fisher Broadcasting Company Communications Site (IDI-012066)
- Raft River Electric/ATC Communications Site and Access Road (IDI-29847)
- Federal Aviation Administration Communications Site and Access Road (IDI-013642)
- Moo View Cow Palace Communications Site and Access Road (IDI-32796)
- ATC Communications Buried Telephone Cable (IDI-5128)
- Raft River Electric Company Buried Power Distribution Line (IDI-4446)
- Windland, Inc. Meteorological Data Collection (IDI-33675)
- Chevron Pipeline Company Buried Liquid Petroleum Pipeline (IDI-0602)
- Raft River Electric Company Overhead Power Transmission Line (IDI-014294)
- State Land Easement to the U.S. for a Buried Stockwater Pipeline and Storage Facility (IDI-29653)
- Private Land Easement to the U.S. for an Access Road (IDI-31422)
- Numerous range improvements including a water station and water storage facility on the north end of the Proposed Project area

Tribal Land Use

No tribal deeded or reservation lands are present in the Proposed Project area. However, the Shoshone-Bannock Tribes continue to maintain historical hunting and gathering rights within the Proposed Project area in accordance with the Fort Bridger Treaty Act of 1868.

3.6.3 Planned Land Use

Management direction is outlined in the Cassia RMP. It includes continuation of fire management, livestock grazing, use of motorized vehicles with restrictions, recreation, and wildlife habitat management. Activity Plans that have been initiated or planned for implementation include: Allotment Management Plans; a Recreation Area Management Plan; a Limited Suppression Fire Plan; a Watershed Management Plan; and a Habitat Management Plan.

Presently the Cassia RMP limits ROW to existing facilities and localities (Page 40 Section D). It also recommends managing the area to maintain scenic quality and open space. The BLM evaluated the

Proposed Project in relation to the current restrictions in the Cassia RMP and determined that it is not consistent with the plan. Because of several factors including, but not limited to, the fact that wind energy development was not considered in 1985 when the Cassia RMP was completed, the relationship of the Proposed Project to the President's Energy Policy, and the growing demand for electric power in the region, BLM has proposed to amend the plan to allow ROW for a single wind energy development in the Cotterel Mountain Management Area. Land Use Plans such as the Cassia RMP can be amended in accordance with BLM regulations (43 CFR 1600), and the National Environmental Policy Act process, as detailed in the Council on Environmental Quality regulations, which guide the preparation of plan amendments (40 CFR 1500). The plan amendment process is tailored to the anticipated level of public controversy and potential for significant impacts. For this proposal, an assessment for consistency with the existing Cassia RMP was completed by the BLM as stated above. The proposed plan amendment will be assessed by alternative in Chapters 2 and 4 of this document to determine the impact on existing resource objectives. A summary of the proposed amendment based on this assessment is provided below.

3.6.4 Rights-of-Way

Current Plan Objective:

Limit ROW to existing facilities and localities.

Proposed Amendment:

The proposed amendment would lift the ROW restriction on Management Area 11 of the Cassia RMP to the extent that wind energy development would be permitted. It would also change the Cassia RMP objective of managing the area to maintain scenic quality and open space. No other developments would be allowed.

These aspects of the Cassia RMP would be amended through the interdisciplinary and public participatory National Environmental Policy Act process in conjunction with BLM resource program-specific guidance.

3.7 RECREATION

The region of south-central Idaho is typically rural in nature. Sparse populations and open space characterize the landscape, with large areas under agricultural production. Desert mountain ranges, caves, rugged lava flows, forested terrain, and large expanses of valley land and rolling mountains make it a unique area in Idaho providing opportunities for a variety of recreational uses. Much of the area is federal land that helps to satisfy the growing public demand for outdoor recreation. The Pomerelle Mountain Resort is located about nine miles west of the Proposed Project area and provides winter recreation in the form of skiing and snowmobiling. The City of Rocks National Reserve, a popular camping, hiking, rock climbing, and historical area is located about 24 miles southwest of the Proposed Project area. The recreational uses of Cotterel Mountain include hunting, OHV use, picnicking, hiking, and some dispersed camping. The public lands associated with Cotterel

Mountain are mandated by the Cassia RMP to provide for multiple uses, including a diverse choice of recreation opportunities.

3.7.1 Recreation Opportunities

The physical environment often determines where, when, and what types of recreational activities occur. Landscape attributes that enhance opportunities for recreation and attract visitors to public land include desert badlands, mountains, canyons, lava features, grasslands, and wooded environments. The Proposed Project area provides opportunities for a number of recreational activities including: sightseeing, wildlife viewing, hiking, picnicking, horseback riding, upland game bird and big game hunting, OHV riding, mountain biking, and camping. Visitor use numbers (dispersed) for the Cotterel Mountain area have been approximately 7,500 individuals for each fiscal year since 2000 (Thompson 2004). Wheeled vehicle use has been limited to existing roads and trails. There are currently no plans to construct any new trails for the area.

The Proposed Project area is designated a Special Resource Management Area. These areas are described in the BLM Land Use Manual-Section 1601 as administrative units established to direct recreation program priorities, including the allocation of funding and personnel, to those areas where a commitment has been made to provide specific recreation activity and experience opportunities on a sustained yield basis (USDI BLM 2000).

The Recreational Opportunities Spectrum (ROS) for the Proposed Project area is semiprimitive motorized. The ROS provides a management tool for inventory, planning, and administration of outdoor recreation resources on public land. The BLM often uses the ROS as a framework for defining the environment present for outdoor recreation opportunities. The ROS recognizes that people differ in their needs and the experience they desire and that the resource base is not uniform. The ROS allows managers to characterize all possible combinations of recreational opportunities and resources and arrange combinations of activities, setting, and experience along a continuum. The ROS establishes management objectives for recreational activities into six classes, ranging from essentially natural low-use areas (resource-dependent recreational opportunities) to highly developed, intensive use areas (facility/vehicle-dependent recreation opportunities). The six classes are identified as primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, rural, and urban. Once these opportunities have been defined, managers are able to determine which opportunities should be provided and are able to assess the impacts of other resource actions on the recreation resource.

3.7.2 Hunting

Hunting in the area (Management Unit #55) consists mainly of upland game birds, deer, and mountain lion. The IDFG manages hunts within the Proposed Project area. IDFG hunting data from 1990 to 2003 indicates that the area receives moderate use (IDFG 2003b).

3.7.3 Camping

Two developed recreation sites are located on Cotterel Mountain. The Coe Creek picnic site is located at the head of Coe Creek within the Proposed Project area. McClendon Spring Campground is located on the lower east side of Cotterel Mountain, outside of the Proposed Project area. These recreational sites have been upgraded and are considered developed, but use is minimal. Total yearly visits to these sites are estimated to be 700 individuals for Coe Creek, and 1,500 individuals for McClendon Springs. There are no developed camping facilities on Cotterel Mountain, however, dispersed camping opportunities are plentiful.

3.7.4 Off-highway Vehicle Use

OHV use occurs throughout BLM lands in Southern Idaho and can be characterized as either a method of transportation or as recreation use. In the transportation category, OHVs are used to transport people to remote areas for activities such as hunting. In the recreation category, OHVs are often used for touring, sightseeing, family outings, hill climbing, and various competitive events.

OHV use on BLM land has increased substantially in recent years. Current regulation and policy require that BLM manage public land for OHV use by designating areas as open, limited, or closed. The Cassia RMP states that the Proposed Project area is open to snowmobiles, but wheeled vehicle use is limited to existing roads and trails.

3.8 LIVESTOCK GRAZING

The grazing history of the Proposed Project area is similar to that of much of the northwest U.S. prior to the mid-twentieth century. Ranchers throughout southern Idaho and northern Utah have used intermixed private, state, and public lands to support cattle, sheep, and horses. The communities surrounding Cotterel Mountain have a rich history of sheep grazing, but due to changing markets, changes in vegetation, irrigation, and loss of area to development, there is a greater emphasis now on cattle.

In the Proposed Project area, the federal grazing program was initiated with the implementation of the Taylor Grazing Act in 1934, administered by the Grazing Service and the Division of Grazing. The program has since been administered by the BLM and is currently managed by the BFO under the Cassia RMP. The guidelines specific to rangeland management are summarized below:

- Provide allocation of available forage among domestic livestock, and wildlife;
- Reserve sufficient vegetation for maintaining plant health, soil stabilization, wildlife cover, and other non-consumptive uses; and
- Range improvements, grazing systems, and other range management practices would be considered in conjunction with livestock management on allotments.

3.8.1 Livestock use of Grazing Allotments

The Proposed Project area, approximately 11,500 acres, lies within two BLM-administered allotments: North Cotterel and South Cotterel (Table 3.8-1 and Table 3.8-2). Thirty-nine percent (4,400 acres) of the Proposed Project area is within the North Cotterel Allotment. Some areas in this allotment are not suitable for livestock grazing due largely to steep slopes and water availability. Currently, the majority of the livestock use is within and adjacent to the Proposed Project area, with the northern portion of the North Cotterel Allotment receiving a larger portion of the use due to water availability. The average stocking rate for the North Cotterel Allotment is seven acres per AUM; therefore, about 629 AUMs are located within the Proposed Project area boundaries.

Table 3.8-1. Current Grazing Permits in the Proposed Project Area.

Name	Number of livestock/type	Dates of grazing	Percent public land	AUMs
North Cotterel Allotment #5001				
Jeff and Tamera Chatburn	436 cattle	5/20-7/31	93	973
	209 cattle	5/20-7/19	93	390
	10 horses	5/20-9/24	93	39
Brigham Young University	5 cattle	4/16 – 10/15	100	30
South Cotterel Allotment #5002				
Helen Anderson	70 cattle	5/01-6/08	100	90
	44 cattle	5/01-9/13	100	197
Blackjack Ranch	5 cattle	5/01-10/12	100	27
Albert Cottle	7 cattle	3/25-4/30	100	9
	8 cattle	2/01-2/28	100	7
Grant Clark	27 cattle	5/01-9/15	100	122
D & K Cattle Co.	41 cattle	5/01-11/30	100	288
Larry and Darlene Kincade	50 cattle	5/01-11/06	100	312
Hank Higley	164 cattle	5/01-9/15	93	692
Jeff Gregersen	37 cattle	5/01-6/15	100	56
	17 cattle	5/01-9/15	100	77
	1 cattle	5/01-5/31	100	1
Wallace Sears Jr.	8 cattle	5/01-9/30	100	40
Ward Livestock Inc	350 cattle	5/01-5/31	100	357
	130 cattle	5/01-9/30	100	654
	67 cattle	10/1-11/14	100	99
	224 cattle	11/15-12/14	100	221

Table 3.8-2. Grazing Allotment Distribution on Cotterel Mountain

	Total Acres	Total AUMs
North Cotterel	12163	1680
South Cotterel	30767	3802

Ninety-one percent of the permitted use (AUMs) on the North Cotterel Allotment is from cattle, and occurs from May 20 to July 31. Horse use (3% of the permitted use) may occur from May 20 to September 24. The remaining use is from cattle (ten head) that are authorized to graze from May 20 to December 27. During recent years approximately 56 percent of the permitted use has not been activated. The remaining 44 percent (both horses and cattle) has been used from mid-May to mid-July.

On the North Cotterel allotment, there are three developed springs, two catchments, and a pipeline system that are fed by a well, which supplies livestock drinking water within the allotment area are found within the Proposed Project. Due to limited water availability, a rotational grazing system is not always feasible. However, when adequate water is available, the livestock permittees rotate grazing between the north and south portions of the allotment.

Two ranching operations are permitted to graze livestock on the North Cotterel Allotment; however, only one of the two permittees have livestock near or in the Proposed Project area. The second permittee uses the portion of the allotment located on the flats east of Cotterel Mountain. Table 3.8-1 lists the grazing permittees authorized to use the North Cotterel Allotment.

Ten ranching operations are permitted to graze livestock on the South Cotterel Allotment. Of these ten, nine are authorized for livestock use within the Proposed Project area. The remaining operator uses only the lower elevation pastures in the South Cotterel Allotment.

Twenty-one percent (6,490 acres) of the South Cotterel Allotment lies within the Proposed Project area. The allotment is divided into eleven pastures. Three of these pastures are located on Cotterel Mountain (mountain pastures) and the remaining eight are on the flats east of Cotterel Mountain (east flats pastures). The Proposed Project area lies within a mountain pasture, specifically the Summit Pasture. The average stocking rate in the mountain pasture is six acres per AUM; therefore, about 1,082 AUMs are located within the Proposed Project area boundary. Incorporated into the Proposed Project area is the proposed Raft River power line route, which passes through the Coe Creek mountain pasture and the Allotment #8 pasture.

A rest-rotation grazing system is implemented on both the upper and lower elevation pastures. Cattle are scheduled to move into the mountain pastures from June 1 to 15 and remain there until about September 30. Annually, livestock graze two of the mountain pastures and the third is rested. Livestock are in each of the grazed pastures for approximately forty-six days. The lower eight pastures are also managed using a rest-rotation grazing system with two pastures rested annually.

Livestock water in the Summit, Coe Creek, and Allotment #8 pastures are supplied by numerous developed and undeveloped springs found throughout the Proposed Project area (Figure 3.1-2). Coe Creek provides another source of water for livestock in the Coe Creek pasture. Pasture and allotment division fences run across, or are adjacent to, the Proposed Project area.

3.8.2 Rangeland Conditions

Monitoring data is important in evaluating the effects of livestock grazing to identify sites of concentrated use and impact. In addition, key forage species including: bluebunch wheatgrass; Sandberg's bluegrass; crested and intermediate wheatgrass; as well as invasive species (cheatgrass, juniper, etc.) are monitored to examine short-term and long-term effects on range condition and trend. These range conditions are evaluated based on their departure from Ecological Reference Areas, as stated in the Idaho Standards for Rangeland Health-43 1480, in order to assess if the ecological processes are functioning within a normal range of variability. Range conditions as described in the Cassia RMP were as follows: three percent excellent; 20 percent good; 75 percent fair; two percent poor. The majority of the fair range rating was due to juniper encroachment as shown on Map 14 of the Cassia RMP (USDI BLM 1985). The primary factors affecting ecosystem functionality are decreased amounts of litter, increased bare-ground, and the introduction of invasive species.

A rangeland health assessment/evaluation was completed for the South Cotterel Allotment in 2004. Vegetation in the Proposed Project area consisted primarily of native plant communities with some exotic species present. In general, the assessment described the range as being healthy, with less than four percent of the range marginally healthy. The assessment described the majority of the range as exhibiting good plant diversity, plant production, and seedling recruitment. Encroaching juniper and decadent sagebrush are contributing factors in those areas showing marginal rangeland health. A determination as to compliance with the Idaho Standards and Guidelines for Rangeland Health was signed in May of 2005. The determination stated that four out of seven applicable standards were being met. A rangeland health assessment/evaluation was also completed for the North Cotterel Allotment in 2004 and 2005. The determination is pending.

3.8.3 Rangeland Improvements

Under the guidance of the Cassia RMP, these allotments, located in Management Area 11, are to be managed according to specific objectives created to improve rangelands and provide sustained forage for livestock and wildlife (USDI, BLM 1985). Objectives specific to the North and South Cotterel allotments include:

- Expand dispersed recreation opportunities on approximately 18,000 acres south of the communication facility.
- Manage the area to maintain scenic quality and open spaces.
- Improve 31, 212 acres of poor and fair condition rangeland to good.
- Provide 5,278 acres of forage for livestock.
- Provide forage for the following mule deer by season of use: 403 spring; 403 summer; 403 fall; 563 winter.
- Provide yearlong forage for 127 antelope.
- Maintain or improve 6,414 acres of critical deer winter range and 703 acres of sage-grouse brood-rearing habitat.
- Protect nesting ferruginous hawks from human disturbance.

- Control surface disturbing activities on 5,677 acres having soils with high erosion potential.
- Transfer 440 acres out of federal ownership: 280 acres via private exchange and 160 acres via sale or other disposal method.

Boundary fences and water developments were constructed by permittees and the BLM in the Proposed Project area from 1950 to present. Under the Cassia RMP, permittees are responsible for maintenance of these improvements as assigned.

3.8.4 Wildhorses

No wildhorses or burros are found in or managed for in the Proposed Project area.

3.9 VISUAL RESOURCES

3.9.1 Visual Resource Management System

In order for the BLM to meet its responsibility to maintain the scenic values of the public lands, they use a Visual Resource Management (VRM) system. This system defines the levels of scenic value, and provides a way to describe and evaluate landscapes (USDI, BLM 1986a; USDI, BLM 1986b). Different levels of scenic values require different levels of management. For example, management of an area with high scenic value might be focused on preserving the existing character of the landscape. In contrast, management of an area with little scenic value might allow for major modifications to the landscape. Determining how an area should be managed first requires an assessment of the scenic value of the area.

Assessing scenic values and determining visual impacts can be a subjective process. To increase objectivity and consistency, the VRM system describes and evaluates landscapes by using the basic design elements of form, line, color, and texture. This same system can also be used to describe proposed actions. Projects that repeat these design elements are usually in harmony with their surroundings, and those that do not create contrast. By adjusting project designs so that the elements are repeated, visual impacts can be minimized. The VRM system provides a way to identify and evaluate scenic values. It also provides a way to analyze potential visual impacts and apply visual design techniques to ensure that surface-disturbing activities are in harmony with their surroundings. Basically, the VRM system consists of two stages: inventory classification and management classification (USDI, BLM 1986b). The VRM Inventory stage is summarized below, followed by the management classification for the Cotterel Mountain area. The analysis is presented in Chapter 4, Environmental Consequences.

3.9.2 Visual Resource Inventory

The Visual Resource Management Inventory involves identifying the visual resources of an area and assigning them to one of four classes using the BLM visual resource inventory process (USDI, BLM 1986a). The process involves rating the visual appeal of a tract of land, measuring public concern for scenic quality, and determining whether the tract of land is visible from travel routes or observation

points. The VRM Inventory Class for an area is determined by using a classification matrix that ranks scenic quality, visual sensitivity, and distance zones (Table 3.9-1). Inventory classes provide a basis for considering visual values in the RMP process, but they do not establish management direction and should not be used as a basis for constraining surface disturbing activities. Visual values are considered throughout the RMP process, and the visual resources are then assigned to VRM classes with the following established objectives.

Table 3.9.1. Existing VRM Inventory Ratings for the Proposed Project Area.

Scenic Quality Rating Unit	Scenic Quality (raw score)	Visual Sensitivity	Distance Zone	Classification
Unit 202	C = Low (5)	Low-Moderate	Foreground/middleground	Class IV
Unit 220	B = Moderate (12)	High	Foreground/middleground	Class II
Unit 243	B = Moderate (12)	Moderate	Background	Class IV
Unit 244	B = Moderate (15)	Moderate	Background	Class IV
Unit 245	C = Low (9)	Low	Foreground/middleground	Class IV

VRM Class I Objective: To preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.

VRM Class II Objective: To retain the existing character of the landscape. The level of change to the characteristic landscape should be low.

VRM Class III Objective: To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate.

VRM Class IV Objective: To provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high.

Scenic Quality is a measure of the visual appeal of a tract of land. In the visual resource inventory process, public lands are given an A, B, or C rating based on the apparent scenic quality that is determined using seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. During the rating process, each key factor is ranked on a comparative basis with similar features within the area. As an example, within the key factor of landform, prominent cliffs with high, vertical relief would receive a score of 5, while a flat valley bottom would receive a score of 1. Within the defined sensitivity level-rating unit, the rankings of each factor are summed. A, B, or C ratings for scenic quality are assigned as follows:

- A = 19 or more;
- B = 12-18; and
- C = 11 or less.

Visual Sensitivity is a measure of public concern for scenic quality. Public lands are assigned high, medium, or low sensitivity levels for each Scenic Quality Rating Units (SQRU; described below) by analyzing various indicators of public concern, such as: type of users, amount of use, public interest, adjacent land uses, and special areas such as wilderness.

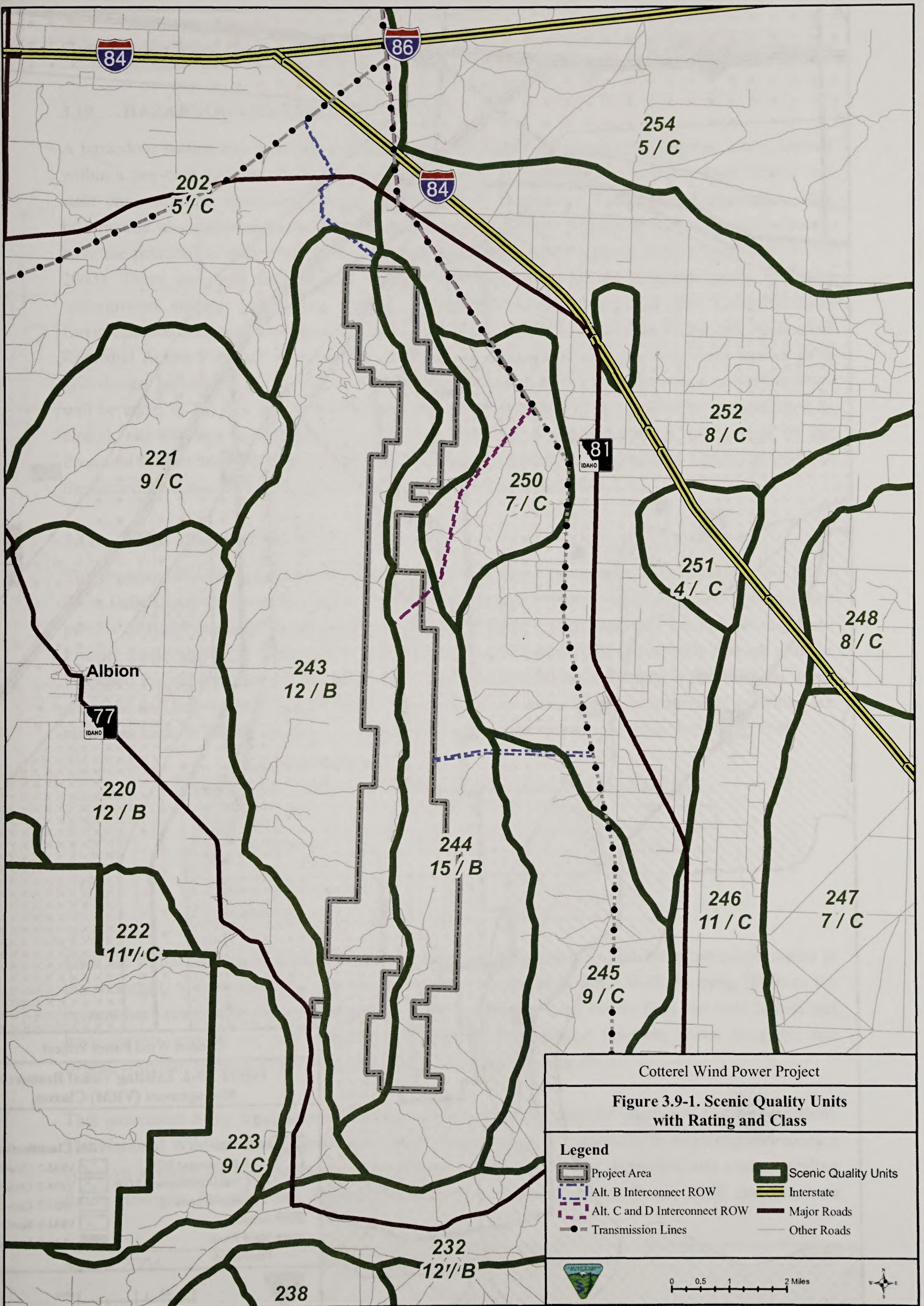
Scenic Quality Rating Units (SQRU). A planning area is subdivided into map area units called SQRU for visual resource rating purposes. SQRU are delineated on a basis of: like physiographic characteristics; similar visual patterns, texture, color, variety, etc.; and areas which have similar impacts from man-made modifications. The size of SQRU may vary from several thousand acres to 100 or less acres, depending on the homogeneity of the landscape features, and the detail desired in the inventory. Normally, more detailed attention would be given to highly scenic areas or areas of known high sensitivity. Within a planning area, each SQRU is assigned a unique map number. Figure 3.9-1 shows the Existing SQRU for the Proposed Project area.

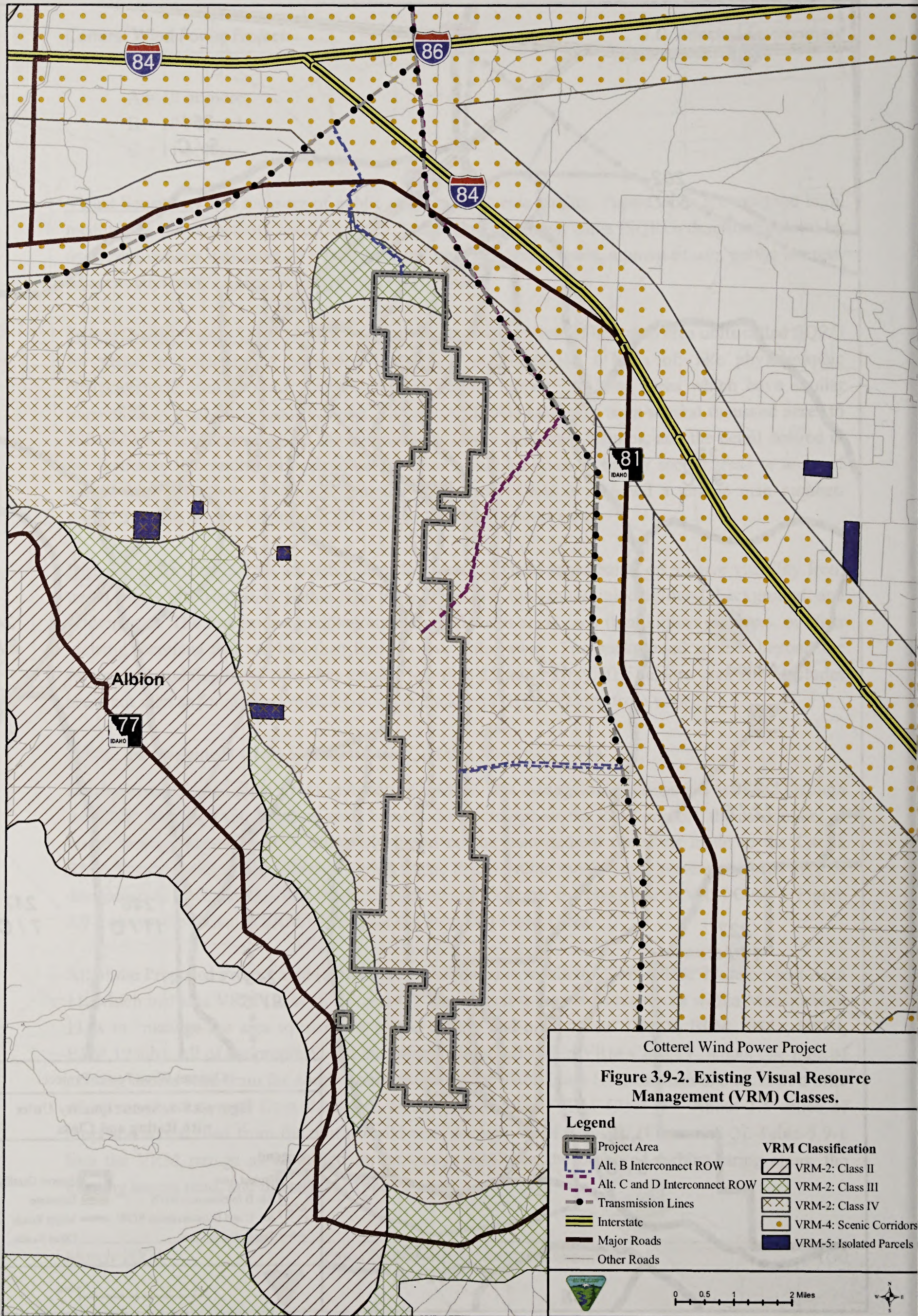
Distance Zone. Landscapes are subdivided into three distance zones based on relative visibility from travel routes or observation points. The three zones are: foreground-middleground, background, and seldom seen. The foreground-middleground zone includes areas seen from highways, rivers, or other viewing locations that are less than three to five miles away. The background zone is beyond the foreground-middleground zone, but usually less than 15 miles away. The seldom-seen zone includes areas not seen as foreground-middleground or background (i.e., hidden from view).

3.9.3 Management Class Rating for the Cotterel Mountain Area

Management Classes differ from inventory classes in that management classes are assigned through the RMP. Although visual values must be considered throughout the RMP process, the assignment of visual management classes is ultimately based on the management decisions made in the Cassia RMP. For example, an area deemed highly scenic that warrants special management attention may be designated as a scenic Area of Critical Environmental Concern and classified as VRM Class I. Figure 3.9-2 shows the Existing VRM Classes for the Proposed Project area.

All of the Proposed Project area (including access roads) is within the Cassia RMP Management Area 11, which includes VRM Class II, III, and IV. The objective for visual resources within Management 11 is to “manage the area to maintain scenic quality and open space” (USDI, BLM 1986a; USDI, BLM 1986b). All of the proposed turbine strings would fall within VRM Class IV. About one mile of existing access road from the south would pass through VRM Class III. Less than one-tenth of a mile of existing access road from the south would pass through VRM Class II. About 1.5 miles of proposed access road from the north would pass through VRM Class III (Figure 3.9-2). Table 3.9-1 lists the VRM ratings as identified in the Cassia RMP for the proposed turbine string areas, the existing access road, and the proposed access road.





3.10 HAZARDOUS MATERIALS

A hazardous wastes and materials evaluation was conducted to help identify potential issues located within a one-mile vicinity of the Proposed Project area. Information was gathered from federal and state environmental databases through Environmental FirstSearch Technology Corporation. This information was reviewed to evaluate whether activities within or adjacent to the proposed study area have the potential to impact environmental conditions within the Proposed Project area (FirstSearch 2003). There are eight sites located within a one-mile radius of the proposed study area: six underground storage tanks; one leaking underground storage tank; and one Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Information System No Further Remedial Action Planned, Archived Site. The archive designation indicates that, to the best of EPA knowledge, assessment at the site has been completed, and that EPA has determined no further steps will be taken to list this site on the National Priorities List. Each of the eight sites is designated as closed, site cleanup completed, or No Further Remedial Action Planned. A site review of the Proposed Project area was found to be free of obvious environmental degradation within the scope of the hazardous substances and petroleum products identified in the CERCLA.

3.11 FIRE MANAGEMENT

The Proposed Project area is located within the Albion Fire Management Unit (FMU) in the BLM Twin Falls District. The terrain of the Proposed Project area is mountainous with mostly contiguous parcels of BLM managed lands along the ridge tops. Table 3.11-1 illustrates the Fire Management Priority Rankings for the Albion FMU. Communities considered at risk from wildfire that are near the Proposed Project area include Albion, Conner, and Elba. Due to the proximity of the wildland urban interface and key wildlife habitat in the Proposed Project area, all fire management priorities are ranked as high. Wildland fire use is considered not appropriate anywhere within the Albion FMU.

Table 3.11-1. Albion FMU Fire Management Priority Ranking

Suppression	High
Fuels Treatments	High
ESR	High
Community Assistance/ Protection	High

Fires are an intricate component of the development and maintenance of natural plant communities in the western U.S. (Brown 2000). Fire exclusion activities on public lands from the early 1900s to the present have resulted in the accumulation of fuels, resulting in more severe fires that burn hotter, and have greater impacts on: soil stability and structure; hydrological function; biotic integrity; and overall community dynamics and functionality (Peters and Bunting 1992).

This movement away from natural fire regimes has created a need for increased fire management. The National Wildland Fire Plan defines and designates agencies nationally to work together using a cohesive strategy for establishing past conditions, identifying current departure, and recommending future strategies for achieving desired outcomes. Information from the Cassia RMP and Southern

Idaho Fire Management Plan have been used to formulate and define alternatives directly related to the Proposed Project area.

Fire History

Fire plays an essential ecological role in the regeneration and maintenance of a diverse mosaic of healthy cover types across ecosystems. Historically (prior to 1900), the area landscape would have been dominated by vegetation characteristic of Fire Regime Condition Class 1 (FRCC 1; USDI 2004b).

From 1984 to 2003, 290 fires burned 145,233 acres of BLM managed land in the Albion FMU. The Proposed Project area is located in the southern part of the FMU where an increased number of fires are human caused; however, these fires are generally small due to suppression response. Fires caused from lightning strikes are also common. Average fire size on BLM lands within the FMU is 501 acres.

Fire Ecology

A mosaic of three vegetation cover types dominates the Proposed Project area; mountain shrub, mid-elevation shrub steppe, and juniper, pinyon/juniper mix. Each vegetation type has a corresponding fuel model (FM) that can be used to predict fire behavior. Fuel models in the Proposed Project area are predominantly FM 2, FM 5, and FM 6. Wildfires in the Proposed Project would be carried by one or more of these FMs. Juniper and mid-elevation shrub covertypes typically fall under Historic Fire Regime II (up to 35 years, stand replacement) while the mountain shrub covertype falls under Historic Fire Regime III (35 to 100 years, mixed severity).

Fuel Model 2 - Timber (Grass and Understory):

Fire spread is primarily through the fine herbaceous fuels, either curing or dead. These are surface fires where the herbaceous material, in addition to litter and dead-down stemwood from the open shrub or timber overstory, contribute to the fire intensity. Open shrub lands and pine stands or scrub oak stands that cover one-third to two-thirds of the area may generally fit this model; such stands may include clumps of fuel that generate higher intensities and that may produce firebrands. Some pinyon/juniper may be in this model.

Fuel Model 5 - Brush (2 feet):

Fire is generally carried in the surface fuels that are made up of litter cast by the shrubs and the grasses or forbs in the understory. The fires are generally not very intense because surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material. Usually shrubs are short and almost totally cover the area.

Fuel Model 6 - Dormant Brush, Hardwood Slash:

Fire carries through the shrub layer where the foliage is more flammable than FM 5, but this requires moderate winds, greater than eight miles per hour at mid-flame height. Fire can drop to the ground at

low wind speeds or at openings in the stand. The shrubs are older, but not as tall as the shrubs types of FM 4, nor do they contain as much fuel as FM 4. This model covers a broad range of shrub conditions. Fuel situations to be considered include intermediate stands of chamise, chaparral, oak brush, low pocosin, Alaskan spruce taiga, and shrub tundra. Even hardwood slash that has cured can be considered. Pinyon/juniper shrublands may be represented but may over-predict rate of spread except at high winds, like 20 miles per hour at the 20-foot level.

Fire Regime Condition Class 3 (FRCC3) dominates the Proposed Project area with small pockets of FRCC2 interspersed.

Fire Regime Condition Class 2 (FRCC2):

Fire regimes on these lands have been moderately altered from their historical range by either increased or decreased fire frequency. A moderate risk of losing key ecosystem components has been identified in these lands. To restore their historical fire regimes, these lands may require some level of restoration as through prescribed fire, mechanical or chemical treatments, and the subsequent reintroduction of native plants.

Fire Regime Condition Class 3 (FRCC3):

These lands have been significantly altered from their historical range. Because fire regimes have been extensively altered, the risk of losing key ecosystem components from fire is high. Consequently, these lands verge on the greatest risk of ecological collapse. To restore their historical fire regimes before prescribed fire can be utilized to manage fuel or obtain other desired benefits these lands may require multiple mechanical or chemical restoration treatments, or reseeding.

Fire Management

Wildfires will be suppressed in the Albion FMU using Appropriate Management Response (AMR). Minimum impact suppression techniques (MIST) may be used as appropriate. Public lands and resources affected by fire would be rehabilitated in accordance with multiple uses identified in the affected area, subject to available funding. Goals and objectives associated with fire management include allowing fire to resume a more natural ecological role on BLM lands, reducing fire suppression costs, reducing the number of acres damaged by severe wildfires, and increasing public safety from wildfires. Short-term goals are to reduce hazardous fuels through various treatment methods (mechanical, chemical and prescribed fire) and to re-introduce fire into the ecosystem.

Fire Mitigation Considerations: Emphasis should be focused on prevention, detection, and rapid suppression response and techniques that would reduce unwanted ignitions and threats to life, property, and natural and cultural resources.

Fuel Treatment Considerations: Non-fire treatments are employed. Prescribed fire is allowed everywhere except where specifically excluded in the Cassia RMP. Pile burning of mechanically removed vegetation is acceptable.

Emergency Stabilization and Rehabilitation (ESR): Projects may be undertaken where wildfires result in a high potential for erosion. ESR projects are generally undertaken within the first year after a wildfire and continue for up to two growing seasons after initiation. Projects aim to establish vegetative cover within the burned area to discourage runoff, weed colonization, and reduce erosion potential. The application of seed to a burned area may expedite the return of desirable vegetative cover within burned areas. Seed may be applied aurally (e.g. helicopter), mechanically (e.g., rangeland drill, chaining, or disking), or by hand.



CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

4.0 ENVIRONMENTAL CONSEQUENCES

This chapter describes the environmental consequences, or potential impacts, on the natural, cultural and human environment on Cotterel Mountain from implementation of the alternatives considered in this Final Environmental Impact Statement (EIS). The topics discussed are by resource, in the same order as those described in Chapter 3, Affected Environment.

For each topic, the impact analysis follows the same general approach. Impact indicators for intensity of impacts were developed based on individual resources. A study area, or area of impact analysis, was also specified for each topic and impact duration definitions (short-term, long-term) were assessed where applicable. Impacts were then identified and assessed based on these definitions and indicators; a review of relevant scientific literature, previously prepared environmental documents (Cassia Resource Management Plan (RMP)), and the best professional judgment of Interdisciplinary Team (IDT) resource specialists.

Much of the information on the affected environment and potential environmental consequences is derived from detailed technical reports prepared by Bureau of Land Management (BLM) specialists, the URS Group, Inc. (URS), and subcontractors to the prime consultant. These reports are available for review as part of the Analysis File maintained for the Cotterel Wind Power Project (Proposed Project) at the Burley Field Office (BFO).

Knowledge is, and always will be, incomplete regarding many aspects of the terrestrial species, vegetative communities, the economy, and communities and their interrelationships. The ecology, inventory, and management of ecosystems are a complex and evolving discipline. However, basic ecological relationships are well established, and a substantial amount of credible information about ecosystems in the Proposed Project area is known. The alternatives were evaluated using the best available information about these ecosystems. While additional information may add precision to estimates or better specify relationships, new information would be unlikely to appreciably change the understanding of the relationships that form the basis for the evaluation of effects.

The numbers generated and used for comparison of impacts are for analysis purposes only. The exact location and size of the Proposed Project features will be determined in the plan of development. Therefore, the exact areas of impact to specific resources are estimates based on the best available information.

4.1 DIRECT AND INDIRECT EFFECTS

Effects are described in general terms and are qualified as short-term and long-term, as appropriate. Impacts may also be described as direct or indirect. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by an action and occur later in time or farther removed from the area, but are reasonably foreseeable.

4.2 CUMULATIVE IMPACTS

The Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) requires assessment of cumulative effects in the decision-making process for federal projects. Cumulative effects are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 Code of Federal Regulations (CFR) 1508.7). Cumulative effects are considered for each resource and are analyzed in Section 4.16 of this document.

Cumulative effects were determined by combining the effects of the alternative with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other past, ongoing, or reasonably foreseeable future actions in this area and in the surrounding landscape. All resource impacts would be added to these actions to present the cumulative picture or incremental contribution this Proposed Project would have on the resources.

4.3 PAST/PRESENT ACTIONS

Past use of the Proposed Project area has included: livestock and wildlife grazing; recreation including hunting, off-highway vehicle (OHV) use, sightseeing, camping, mountain biking, horseback riding, and wildlife sightseeing; and siting of communication facilities (microwave and cell phone transmitters). These uses continue through the present and are anticipated to continue into the reasonably near future.

4.4 FUTURE FORSEEABLE ACTIONS

On Cotterel Mountain, future foreseeable actions, other than the Proposed Project, would be limited to general recreation, OHV use, hunting, grazing, and siting of communication facilities at the mountains summit.

4.5 PHYSICAL RESOURCES

4.5.1 Climate and Air Quality

This section describes air quality impacts that could result from construction and operation of the Proposed Project. Wind power projects do not involve the combustion of fuels to generate electricity, so there are no air quality impacts from the generation of power. Any air quality impacts would be related to emissions from vehicles and from fugitive dust associated with construction and operations and maintenance (O&M) activities. The Proposed Project would not result in any impacts to the climate.

Alternative A

Under Alternative A there would be no new sources of emissions or fugitive dust. Existing recreational use would continue resulting in minor amounts of emissions from the exhaust of OHV. Small amounts of fugitive dust would be generated from OHV use and cattle trailing. Fugitive dust

from wind erosion of the existing native surface roads would continue to occur. Smoke from possible wildland fires could result in a temporary reduction of air quality standards.

Alternative B

Construction

Temporary and localized increases in criteria pollutant concentrations would occur during the construction phase of the Proposed Project. Expected emissions would consist of tailpipe emissions from the exhaust of construction equipment, particulate matter emissions from the concrete batch plants, combustion emissions from the diesel-fueled generators associated with the concrete batch plants, fugitive dust emissions from vehicular traffic, and fugitive dust emissions from soil and rock disturbances. In addition, blasting for road construction and turbine foundations would release fugitive dust and small amounts of CO and NO_x. Since construction-related air pollution effects would be temporary and localized no impact on air quality or ambient values in the study area would occur. These temporary and localized potential emissions increases are not expected to have an appreciable impact on air quality.

Operation

During operation of the facility, the maintenance of the turbines would require changing of turbine oil, cooling fluids and grease, all of which could release minor amounts of VOCs. These activities would be of limited duration and would be expected to dissipate quickly with no local or regional effects. Therefore, the operation of the Proposed Project would not impact air quality.

Alternative C

Impacts to air quality for construction and operation under Alternative C would be similar to those described under Alternative B; however, the temporary effects of construction would be slightly less due to smaller area disturbed.

Alternative D

Impacts to air quality for Alternative D would be similar those described under Alternative B. Alternative D would result in the least amount of ground disturbance and would likely have a shorter construction period. Therefore, the temporary effects to air quality would be the least of all the action alternatives.

4.5.2 Geology

The primary impacts on geology associated with the Proposed Project are tied to the area of bedrock disturbance identified for each alternative. The type of bedrock disturbance would be different for each turbine location and roadway. The impacts would also be dependent on the number of acres of associated geologic disturbance, as well as the number and distribution of turbines and roadways proposed under each of the alternatives.

Alternative A (No Action)

Under Alternative A, no impacts related to geology would occur.

Alternative B

Under Alternative B, the proposed construction would have a permanent footprint of approximately 203 acres due to blasting to set foundations for wind turbine pads, transmission interconnect lines and road construction. Because best management practices (BMP) would be used during construction (Appendix C), impacts regarding landslides and erosion potential would be minimized.

Earthquake induced landslide areas are apparent at the northeastern side of the study area. However, no literature could be located that documents these events (Griggs 2004). The potential for movement along faults and new landslides in the Proposed Project vicinity is considered low. The Proposed Project would be designed and constructed with appropriate seismic design codes, including foundations for the wind turbines placed directly on competent rock.

Alternative C

The proposed construction would have a permanent footprint of approximately 203 acres due to blasting to set foundations for wind turbine pads, auguring for the transmission interconnect line poles and road construction. Construction activities from Alternative C would be less than those discussed under Alternative B because there would be less blasting and construction due to the placement of fewer turbines and fewer miles of road. There would however, be a greater number of holes augured for the placement of the transmission interconnect line poles.

Alternative D

The proposed construction would have a permanent footprint of approximately 158 acres due to blasting to set foundations for wind turbine pads and road construction. Construction activities from Alternative D would be less than those discussed under Alternative B or Alternative C because there would be less blasting and construction due to the placing of fewer turbines and roads. Impacts to geology from building the Proposed Project would be the least under Alternative D.

4.5.3 Soils

The primary impacts on soils associated with the Proposed Project are tied to the area of surface disturbance identified for each alternative. Although the type of surface disturbance would be similar for each turbine location and roadway, the impacts would be dependent on the number of acres of associated soil disturbance, as well as the number and distribution of turbines and roadways proposed under each of the alternatives. Impacts to soils would be minimized during construction using the BMP described in Appendix C.

Alternative A (No Action)

Under Alternative A, no impacts to soils from the Proposed Project would occur.

Alternative B

Under Alternative B, impacts to soils would be directly related to acres of surface disturbance. Soils would be disturbed, mixed structurally, compacted, and exposed to erosion during construction, possibly resulting in a temporary increase in erosion and windblown dust on up to approximately 368 acres (3%) until construction is completed (Table 4.5-1). Following construction, approximately 165 acres would be reclaimed. Post construction permanent impacts would affect about 203 acres (2%) of soils in the Proposed Project area. The construction of roads and turbines would impact soils by mechanically breaking down the soil structure, which would increase the erosion potential. Impacts to soils would indirectly impact vegetation and the ability to re-vegetate after construction.

The transmission interconnect lines would result in a small surface impact to soils at the base of each H-frame pole. These disturbed areas would be revegetated according to BMP outlined in Appendix C.

Table 4.5-1. Acres of Soil Disturbance Under Each Alternative.

Soil Group	Alternative B	Alternative C		Alternative D		Erosion Potential Hazard
Size of turbine (meters)	70	77	100	77	100	
Group 1	19	17	17	15	15	Moderate to severe
Group 2	1	1	1	1	1	Slight to moderate
Group 3	0	0	0	0	0	Slight to moderate
Group 4	23	72	72	73	73	High
Group 5	137	105	105	69	69	Moderate to severe
Group 6	22	8	8	0.4	0.4	Severe
Total temporary	164	144	131	121	109	
Total permanent	201	203	203	158	158	

Alternative C

The size of the temporarily disturbed areas varies only slightly based on type of turbines selected. Alternative C would initially impact between approximately 337 to 350 acres (3%) of soils in the Proposed Project area. Following construction, between approximately 134 to 147 acres would be reclaimed, resulting in about 203 acres (2%) of permanent impacts to soils within the Proposed Project area. Overall impacts to soils under Alternative C would be similar to those described under Alternative B.

Alternative D

Impacts to soils from construction and operation of the Proposed Project would be the least under Alternative D. The size of the temporarily disturbed areas varies only slightly based on type of

turbines selected. Alternative D would initially impact approximately 269 to 270 acres (2%) depending upon which turbine is selected. Permanently disturbed acres would be about the same for both turbine sizes of about 158 acres (<1.5%) and would have similar impacts as described under Alternative B.

4.5.4 Water Resources

Alternative A (No Action)

Under Alternative A, no additional impacts to water resources would occur.

Alternative B

Under Alternative B, potential impacts to water resources would be minimized using BMP during construction. Impacts due to accidental spills of hazardous materials (Section 4.14) would be low due to BMP used during construction and project O&M.

Water necessary for construction of the Proposed Project would come from a permitted private or municipal source outside the Proposed Project area. Since the source or volume of water needed for construction is unknown at this time, the potential impacts from its use cannot exactly be determined. However, since the use of off-site water for construction would be temporary and short-term, any potential impacts would be expected to be slight and localized in nature.

Some of the road building, and all of the tower foundations would require the blasting of bedrock in a controlled fashion to break the rock just sufficiently to allow for easier excavation. Impacts to springs in the Proposed Project area from blasting are not anticipated. This is due to the type of ground water flow system that produces the springs. Two factors are considered as being favorable for maintaining spring flow: (1) blasting is not anticipated to affect rock at any great distance from the tower locations, and (2) any rock disturbance that might occur would most likely produce additional vertical fracturing in the bedrock without affecting the lateral flow of ground water as it moves down gradient off the mountain crest. This increase in secondary porosity would actually mimic the existing flow system, whereby precipitation and snow melt provide recharge water via vertical columnar jointing in the volcanic flow that forms the surface rock over most of the Proposed Project area. Thus, the overall mechanism of ground water flow would not be affected by blasting operations (see Chapter 3 for description of ground water flow).

Potential impacts from construction of the Proposed Project to 303d listed streams would be limited to potential delivery of sediment to these water bodies. The only surface flow that would be affected by construction of the Proposed Project under Alternative B is Summit Creek. Reconstruction of the south access road under Alternative B would require the replacement of the existing culvert and the removal of a small amount of riparian vegetation. However, because construction activities would be required to follow BMP including erosion control and soils management techniques it would be unlikely that sediment would be delivered to Summit Creek or to any 303d listed streams. These BMP would be employed during construction, O&M, and decommissioning. Therefore, the Proposed

Project is not expected to impact the 303d listed streams that are located near the Proposed Project area.

Alternative C

Construction activities from Alternative C would approximate those for Alternative B, and would be expected to have no impact to water resources in the Proposed Project area. The transmission line proposed in Alternative C would cross the North and South Side Canals, part of a wetland west of Lake Walcott and the Snake River. However, no transmission line poles would be sited in any of these water features or waters of the United States (Snake River) and no impact would be expected.

Alternative D

Construction activities from Alternative D would approximate those for Alternative B and Alternative C, and would also be expected to have no impact to water resources in the Proposed Project area. The transmission line proposed in Alternative D would cross the North and South Side Canals, part of a wetland west of Lake Walcott and the Snake River. However, no transmission line poles would be sited in any of these water features or waters of the United States (Snake River) and no impacts would be expected.

4.5.5 Noise

Construction Impacts

The Proposed Project area is relatively remote and unpopulated. The nearest residence is located approximately two miles west of the proposed turbine string. There are a number of residences along State Highway (SH)-77 and SH-81 in the towns of Declo, Albion, Connor and Malta.

Construction would create the greatest project related noise impacts. The frequency and duration would vary with the amount of construction in each action alternative. In all of the action alternatives, noise would occur from construction equipment and other vehicles associated with road and turbine string construction. During the eight-month construction period, there would be approximately 2,205 trips of large trucks delivering the turbine components and related equipment, and approximately 12,735 trips including dump trucks, concrete trucks, cranes, and other construction and trade vehicles. Power tools such as pneumatic wrenches, vibrators, and saws would add temporarily to the overall noise level. Using typical construction site noise levels (United States (U.S.) Environmental Protection Agency (EPA) 1974), noise levels during construction would be expected to range from 68 A-weighted decibels (dBA) to infrequent peaks of up to 95 dBA at 50 feet from the operating equipment. Construction noise caused by the Proposed Project may temporarily impact people and wildlife. However, the nearest resident is located approximately two miles west of the Proposed Project construction area.

Blasting activity for the proposed construction would occur as needed in all action alternatives. The noise from blasts can extend for a few miles when geographical and atmospheric conditions are conducive. However, such noise would be infrequent and of short duration. Blasting would only be

conducted during daylight hours. The vibration levels, which result from blasting, would not be anticipated to be of sufficient magnitude to adversely impact structures, because most of the blasting would occur along the Cotterel Mountain ridgeline well away from any structures or residences. Therefore, it is not anticipated that blasting would impact any residences or communities near the Proposed Project area.

Visitors to the Proposed Project area during construction periods could be affected by noise, based upon the proximity and type of construction activity. Within some portions of the Proposed Project area, topographic features would function to restrict most of the construction noise to the immediate vicinity of the construction activities. With rare exceptions, construction-related noise impacts would be limited to daytime hours. Impacts to nesting wildlife would be minimized by restricting construction activities during certain nesting periods (Appendix C and Appendix D).

Operational Impacts

Sound travel outdoors, especially over distances greater than 200 to 300 feet from a sound source, and is highly dependent on weather conditions. The atmospheric conditions that affect sound travel the most are temperature variations, wind currents, and humidity. Sound tends to travel farther than expected when it is traveling with the wind.

As noise spreads out from a source, the sound intensity would drop at a rate of three decibels (dB) per doubling of distance for a line source such as a road and at six dB per doubling of distance for a point source such as truck or piece of heavy equipment. The type of ground (hard or soft, vegetated or unvegetated) can affect this rate of drop in the sound level as well as natural barriers.

Modern wind turbines are designed with large rotor diameters that have very low rotational speeds. Efficient power generation is achieved at these low rotational speeds, thereby reducing noise impacts that would result from higher rotational speeds. The rotor blades make a slight swishing sound when rotating. Because of these technological advances and the distance of the blades from the ground (minimum of 95 feet), even when standing immediately underneath a turbine, this noise is anticipated to be minimal. Furthermore, as wind speeds increase, the sound made from the wind passing over the human ear is typically louder than and drowns out the swishing sound of the rotating turbine blades.

Vibration-reducing features are incorporated into the design of the turbines. On large modern wind turbines, the chassis frame of the nacelle is designed to ensure the frame would not vibrate as a result of movement of the other turbine components. As discussed in Chapter 2, regular maintenance is scheduled for the structures. Routine maintenance would also reduce the likelihood of excessive noise and vibration from worn parts or lack of lubricating oils. Therefore, minimal noise and vibration is anticipated to result from the operation of the wind turbines.

Noise from the high-voltage overhead transmission lines and distribution lines is generated by electrical discharge activity resulting in a characteristic crackling sound. Noise from corona discharge

caused by water droplets cannot be avoided. This noise consists of a crackle that is often accompanied by a low-frequency (100Hz) hum.

Noise from operation of substations results in two sources of audible noise: transformer noise and switchgear noise. Transformer noise consists of a constant low-frequency hum at about 100 Hz. Switchgear noise is generated by the operation of circuit breakers used to break high-voltage connections. An arc formed between the separation contacts has to be "blown out" using a blast of high-pressure gas resulting in a short duration but loud sound.

Alternative A (No Action)

Under Alternative A, existing background noise levels on Cotterel Mountain and its vicinity would continue without influence of the Proposed Project. Existing sources of noise that would continue to occur under Alternative A include: recreational users such as OHVs; snowmobile riders; occasional low flying aircraft; agricultural equipment; and traffic on area roads and highways such as SH-77, SH-81, and Interstate 84 (I-84).

Alternative B

Noise impacts due to construction are expected to be low during the construction period. The transportation noise from large trucks during the initial construction period would be temporary (eight months). Operational impacts from noise would not be expected to occur. Noise generated by the operating wind turbines would most likely dissipate prior to reaching residences that are located over two miles from the Proposed Project. The transmission interconnect lines would not pass close enough to any residents or other sensitive receptors for the crackle and low-frequency hum generated by electrical discharge to be audible.

Recreational users of Cotterel Mountain when standing near or under the operating wind turbines would hear the swishing sound of the rotor blades. Whether this swishing sound is bothersome would likely depend upon the individual. Recreational users would also hear the crackling and hum from the electrical discharge from the transmission interconnect lines as well as the hum and air blast from the substation switchgear. Recreational users would only hear these sounds if when in close proximity to either the transmission interconnect lines or the substations.

Alternative C

Under Alternative C, impacts from noise as a result of construction and operational activities would be similar to Alternative B. Under Alternative B, there would be only one transmission interconnect line and one substation. As a result, there would be few opportunities for recreational users to be exposed to the sounds generated by these project features.

Alternative D

Under Alternative D, impacts from noise as a result of construction and operational activities would be similar to Alternative B and Alternative C. However, Alternative D would have fewer turbines and

therefore would have less potential to affect recreational users of the mountain as a result of operational noise. Impacts from the transmission interconnect lines and substation would be the same as Alternative C.

4.6 BIOLOGICAL RESOURCES

4.6.1 Vegetation

This section discusses the potential impacts to vegetation resulting from implementation of the alternatives. This analysis describes how the proposed activity could directly, indirectly, and cumulatively affect community composition and dynamics. The analysis takes into account existing and future vegetation population and distribution patterns.

The primary impacts on vegetation associated with the Proposed Project are tied to the vegetation community affected and the area of surface disturbance identified for each alternative. Although the type of surface disturbance would be similar for each turbine location and roadway, the impacts would be dependent on the number of acres of associated vegetation, as well as the number and distribution of turbines and roadways proposed under each of the alternatives. For this analysis, acres were used for each vegetation type affected for the entire Proposed Project rather than a site-by-site basis.

Alternative A (No Action)

Direct and indirect impacts to vegetation in the area would be associated with activities currently outlined in the Cassia RMP including: wildlife use, continued livestock grazing, vegetation treatments, range improvement projects, recreation, and some minor modifications and alterations to the existing communication facilities. These uses and potential modifications are not expected to alter the existing vegetation beyond the levels identified in the Cassia RMP.

Alternative B

Construction impacts associated with Alternative B would initially affect approximately 368 acres (3%) of the Proposed Project area. Post-construction reclamation would restore vegetation to approximately 165 acres (45%) of this affected area. It could take 20 to 40 years or more for reclaimed areas to return to their pre-disturbance community types. It should be noted that approximately ten percent to 20 percent of the temporarily disturbed sites could have shallow soils that would have a low probability of successful restoration. The result would be a permanent impact to approximately 203 acres (2%) of the Proposed Project area.

Vegetation community types that would be directly affected from construction activities include: juniper; mountain mahogany; big, low, and mountain sagebrush; grasslands; and some riparian sites (Table 4.6-1). Approximately one-tenth acre (less than 1% of the Proposed Project area) of riparian habitat along Summit Creek would be affected as a result of culvert replacement and road improvement of the south access road. Agricultural land, aspen communities, and open water sites would not be affected by this alternative.

The construction of roadways, turbines, substations, and the transmission interconnect lines throughout the Proposed Project area would directly impact vegetation and special status plant species by reducing established native communities and habitat. It could also indirectly impact vegetation and special status species habitat by mechanically impacting soils, increasing the potential for establishment and spread of invasive and noxious weed species, and potentially alter the fire regime within the system.

Construction activities such as trampling, surface disturbance, accidental spills, or burning would directly impact established native communities, including non-vascular and special status species populations. These impacts would decrease the number of individuals available for fertilization and seed production, reducing the potential number of seeds for reestablishment and genetic variability of subsequent generations; therefore, short-term and long-term direct impacts to vegetation would limit the capacity of these communities to reestablish.

Mechanical effects to soil from construction activities, such as surface disturbance or soil compaction, would indirectly affect vegetation and special status species by impacting soil structure and function. Surface disturbances from excavation and blasting could lead to increased erosion potential and the loss of topsoil. The loss of this soil layer could result in: diminished structural support for, and exposure of, root systems; a reduction of available nutrients for established plants; and a diminished seed bank. Soil compaction on the other hand, could reduce water infiltration, restrict root depth, and limited seed germination. Individually, or a compilation of these two impacts, could indirectly lead to further reductions in native plant communities and potential for reestablishment.

Surface disturbances from construction activities could also indirectly impact vegetation and special status species by creating habitat for invasive species, or increasing the susceptibility of the system to new invasive species and noxious weeds from external sources. The establishment and spread of these species would lead to increased direct competition for limited resources (nutrients, water, space, etc.) with native and desired plant species. Indirectly, invasive and noxious weed species could augment the amount and continuity of fuels, which could lead to decreased fire return intervals (Peters and Bunting 1994; Whisenant 1990). The compilation of decreased fire return intervals and competition for resources could appreciably alter community dynamics (fire frequency and severity, soil stability, nutrient cycling, etc.); therefore, surface disturbances would likely have short-term as well as potentially long-term impacts on vegetation and special status species. Maintenance activities may also redisturb native and/or restored vegetation communities and continue to provide sites for invasive vegetation.

Table 4.6-1. Permanent and Temporary Impacts to Vegetation (in acres) from the Proposed Project.

Vegetation Community	Alternative B			Alternative C 77m to 100m			Alternative D 77m to 100m		
	Permanent Impact	Temporary Construction Impacts	TOTAL	Permanent Impact	Temporary Construction Impacts	TOTAL	Permanent Impact	Temporary Construction Impacts	TOTAL
Aspen	0	0	0	0	0	0	0	0	0
Juniper	17	14	31	9	6 to 7	15 to 16	6	4 to 5	10 to 11
Juniper/mountain mahogany	13	11	24	13	9	22	12	8 to 9	20 to 21
Mountain mahogany	14	11	25	13	9	22	11	8 to 9	19 to 20
Big sagebrush	12	10	22	2	1	3	1	1	2
Mountain sagebrush	26	21	47	13	9	22	5	4	9
Mountain sage/low sage	15	12	27	15	10 to 11	25 to 26	10	7 to 8	17 to 18
Low sagebrush	40	32	72	32	21 to 23	53 to 55	12	8 to 9	20 to 21
Grassland	38	31	69	86	57 to 62	143 to 148	85	60 to 67	145 to 153
Agricultural	0	0	0	0	0	0	0	0	0
Disturbed/existing roads	26	21	47	18	12 to 13	30 to 31	15	11 to 12	26 to 27
Open water	0	0	0	0	0	0	0	0	0
Riparian	0.1	0.1	0.2	0	0	0	0	0	0
Rock outcrop	2	2	4	2	1	3	1	1	2
Total	203	165	368	203	134 to 147	337 to 350	158	111 to 123	269 to 282

Alternative C

Construction impacts associated with Alternative C would initially affect approximately 337 to 350 acres (3%) of the Proposed Project area. Post-construction reclamation would restore approximately 134 to 147 acres (40% to 42%) of this affected area. However, it should be noted that approximately ten percent to 20 percent of the temporarily disturbed sites could have shallow soils that would have a low probability of successful restoration. The result would be a permanent impact to approximately 203 acres (2%) of the Proposed Project area.

Vegetation community types that would be directly affected from construction activities include: juniper; mountain mahogany; big, low, and mountain sagebrush; and grasslands (Table 4.6-1). Agricultural land, aspen communities, and open water sites would not be affected by this alternative.

Riparian community types would be impacted by the crossing of the Snake River by the transmission interconnect line. Russian olive and some small cottonwood trees would need to be removed to facilitate the siting of the wooden H-frame pole structures to support the transmission interconnect line as it crosses the Snake River. The cleared vegetation would be expected to reestablish itself within three to five years following construction.

Impacts to vegetation and special status plants species from construction activities would be similar to Alternative B. The number of acres permanently affected would be the same as Alternative B. However, under Alternative C, the total acres of vegetation affected by both temporary and permanent impacts would be less (Table 4.6-1). By affecting fewer acres, the number of individual plants lost would be reduced; therefore, the direct impacts to reproduction and reestablishment would be decreased. Similarly, a reduction in the number of acres directly affected would decrease the potential for indirect impacts associated with invasive species, mechanical impact to soils, and alteration of community dynamics.

Alternative D

Construction impacts associated with Alternative D would initially affect approximately 269 to 282 acres (3%) of vegetation within the Proposed Project area. Post-construction reclamation would restore approximately 111 to 123 acres (41% to 44%) of this affected area. However, it should be noted that approximately ten percent to 20 percent of the temporarily disturbed sites could have shallow soils that would have a low probability of successful restoration. The result would be a permanent impact to approximately 158 acres (1%) of the Proposed Project area.

Vegetation community types that would be directly affected from construction activities include: juniper; mountain mahogany; big, low, and mountain sagebrush; and grasslands (Table 4.6-1). Agricultural land, aspen communities, and open water sites would not be affected by this alternative.

Impacts to riparian vegetation would be the same as those described under Alternative C.

Under Alternative D, potential impacts to vegetation and special status plants species from construction activities would be less than those expected for Alternative B and Alternative C. Also, Alternative D would affect fewer total acres of vegetation when considering both temporary and permanent impacts (Table 4.6-1). By affecting fewer acres, the number of individual plants lost would be reduced; therefore, the direct impacts to reproduction and reestablishment would be decreased. Similarly, a reduction in the number of acres directly affected would decrease the potential for indirect impacts associated with invasive species, mechanical impact to soils, and alteration of community dynamics.

4.6.2 Wildlife

A detailed report on probable impacts of this Proposed Project is provided in the Proposed Project technical report for biological resource impacts (Sharp *et al.* 2005). There are no similar operating wind projects located on the common landforms (long, narrow ridge with cliffs), region (southeast Idaho), or within specific habitats (sagebrush and mountain mahogany) that exist on Cotterel Mountain. As a consequence, there is no specific case history available to use in predicting the impacts of this Proposed Project on wildlife. Thus, this impact analysis relies on the experience and data from other western wind plants and in some cases, midwestern wind plants. It should be noted that there are several wind power projects on private land that have recently received permits in Idaho and which could be under construction during the next few years. These may provide some insight into wildlife impacts but none are in habitat similar to that on Cotterel Mountain. Therefore, they will not be a factor in the analysis of potential wildlife impacts from this Proposed Project.

Ranking systems provide insight into species-specific population status (e.g. potential decline, population fragility, or potential for impacts) and will be used in this section to assist in describing the context and intensity of impacts to specific species from this Proposed Project. For example, suspected impacts to a BLM Type II Special Status Species would be more closely scrutinized than would those of a BLM Type V watch species because it is likely that the population of a watch species would be more stable.

Potential impacts to wildlife will be analyzed in terms of: (1) local populations, (2) surrounding area populations, and (3) landscape populations. Local impacts are those that are anticipated to result from the Proposed Project on-site. Surrounding area impacts are those that may affect connected or adjacent populations, migrations, habitat use, or “ripples” from the local effects. The surrounding area would be considered the Raft River-Cassia Creek and Marsh Creek watersheds. Landscape level effects are generally thought of as impacts to populations such as migratory birds, bats, or other migratory species. A landscape effect could include analysis of impacts to wildlife populations in other states.

Wildlife impacts for ranked species in the local, surrounding area and landscape, both direct and indirect as well as cumulative impacts will generally be discussed within the framework of the following effects: direct mortality, habitat loss, habitat avoidance (displacement), and habitat degradation.

Big Game

Big game species are an important natural resource in Idaho, and hunting is one of Idaho's primary outdoor recreational activities. High quality, relatively undisturbed big game winter range is an important resource, especially those areas where human disturbance is low. The quantity and quality of winter range usually limits big game populations, so a reduction in the carrying capacity of winter range could result in permanently lowered populations. The quality of winter range is affected by the amount of human disturbance, which is in turn related to how easily people can access winter range habitat. Big game using the parts of Cotterel Mountain outside the vicinity of the access road to the radio tower site is typically accustomed to seclusion and low levels of human intrusion.

Alternative A (No Action)

The No Action Alternative would not adversely affect big game winter range on Cotterel Mountain.

Alternative B

Big game species potentially occurring on Cotterel Mountain (mule deer, bighorn sheep, and mountain lion) would experience direct habitat loss, and the indirect impacts of displacement from the vicinity of the site during both construction and operation of the Proposed Project. The acreages of impact to big game habitat presented below are for the amount of habitat actually disturbed by the Proposed Project; additional habitat adjacent to the actual disturbance may not be used by big game due to the presence of humans, equipment, and noise during construction and O&M activities.

Approximately 105 acres of mapped mule deer winter range, comprising two percent of the total mapped winter range within the Proposed Project area, would be permanently eliminated under Alternative B (Table 4.6-2). The loss of two percent of the total mule deer winter range within the Proposed Project area is not expected to affect the number of deer that can be supported during winter on Cotterel Mountain; therefore, impacts from the Proposed Project on mule deer winter range are expected to be low. Some habitat avoidance and habitat degradation would also be expected to occur.

Table 4.6-2. Potential Mapped Big Game Habitat Loss from the Proposed Project.

Alternative	Big Game Species Habitat Type		
	Mule Deer Winter Range (acres)	Bighorn Sheep Winter Range (acres)	Mountain Lion (acres)
Alternative B			
Permanent impact	105	194	203
Percent of total habitat	2%	2%	2%
Alternative C			
Permanent impact	62	162	203
Percent of total habitat	1%	1.5%	2%
Alternative D			
Permanent impact	58	115	158
Percent of total habitat	1%	1%	1.5%

The overall response of mule deer to the operating wind power project is difficult to predict. Radio telemetry studies have shown that mule deer avoided oil and gas exploration sites for distances of up to one mile in Wyoming (NWCC 2004). It is possible that some portion of the mule deer that use Cotterel Mountain would habituate to the presence of the operating project as well as to the increased traffic associated with maintenance of the Proposed Project. Some mule deer may not habituate to the presence of the Proposed Project and its associated activities and therefore would avoid the Proposed Project area. It would be anticipated that mule deer would use other winter range within the Raft River Valley drainage system. In addition, mule deer may avoid the Proposed Project area year round, thus losing not only winter range use, but potentially other seasonal use of the area. It is unknown if this displacement would adversely affect the behavior and fitness of these deer.

The Proposed Project, under Alternative B, has the potential to increase the number of visitors to Cotterel Mountain. Increased human activity would be expected to result in additional displacement of mule deer further from their Cotterel Mountain winter range. Improved road access available to hunters could result in increased harvest or poaching of deer. However, if human use increases following completion of the Proposed Project, then some displacement of mule deer from the area would be expected.

Alternative B would permanently eliminate a total of 115 acres of mapped bighorn sheep winter range, which is less than one percent of the total area of winter range within the Proposed Project area (10,877 acres). Although most of Cotterel Mountain is designated as bighorn sheep winter range (Idaho Department of Fish and Game (IDFG) 2003b), it is currently not used and therefore adverse impacts are not expected from Alternative B. However, it could be expected that bighorn sheep habitat on Cotterel Mountain would become unsuitable with the development of the Proposed Project and increased human use of the area, thus the potential for bighorn sheep use on Cotterel Mountain in the future would be lost.

The use of fencing within the Proposed Project area would be very limited. Chain link fences would be used to prevent big game, livestock, and people from entering the Proposed Project substations. Since individual wind towers would not be fenced, it is anticipated that big game movement through the Proposed Project area would not be curtailed or hindered.

Disturbance during and after construction would also have adverse impacts on mountain lions. Mountain lions, would likely initially avoid the area during project construction. Following construction mountain lions may habituate to the operating project to some degree depending on the level of public use of the area, and to any changes that may occur to mule deer distribution. Construction and O&M may change the patterns of mountain lion use and decrease prey availability on Cotterel Mountain.

Alternative C

The impacts of Alternative C to big game would be similar to those expected to occur under Alternative B, with slightly smaller areas of temporary impacts (Table 4.6-2).

Alternative D

The impacts to mapped mule deer winter range from Alternative D would be slightly less than Alternative B but would be about the same as Alternative C. Under Alternative D, no turbines would be constructed along the east ridgeline of Cotterel Mountain. Overall, there would be a reduced potential for disturbance to mule deer from construction activities and there would be no O&M activities along the east ridge area.

Impacts to mapped bighorn sheep winter range from Alternative D would be slightly less than Alternative B and Alternative C (Table 4.6-2). Under Alternative D, no turbines would be constructed along the east ridgeline of Cotterel Mountain. Overall, there would be reduced potential for disturbance to mapped bighorn sheep from construction activities and there would be no O&M activities along the east ridge area.

Impacts to mountain lions from Alternative D would be the similar to Alternative B. Under Alternative D, no turbines would be constructed along the east ridgeline of Cotterel Mountain. Overall, there would be reduced potential for disturbance to mountain lions from construction activities and there would be no O&M activities along the east ridge area.

General Wildlife Habitat for Birds and Non-Game Mammals

Alternative A (No Action)

The No Action Alternative would not adversely affect wildlife habitat on Cotterel Mountain.

Alternative B

Non-game mammals and small birds would be affected by increased traffic and human presence on Cotterel Mountain, but primary effects would occur in direct proportion to the amount of potential habitat removed by Proposed Project construction. Alternative B would permanently eliminate about 200 acres, or two percent of the 11,500-acre Proposed Project area, and temporarily alter an additional 164 acres (1.4%), which would be restored once construction is complete. It should be noted that restoration of shrub-steppe vegetation to a condition where it is again providing suitable habitat could take many years. Due to the added complication of soil compaction during construction of the Proposed Project, it could take up to 20 years or longer to restore temporarily altered habitat on Cotterel Mountain.

Under Alternative B, there would be loss of a portion of seasonal (winter and nesting) habitat for many different species such as small birds, small mammals and raptors. Based on the vegetation analysis, there is not expected to be a total loss of any single vegetation cover type or habitat found on Cotterel Mountain. During construction, some areas would likely be avoided by those resident birds and mammals that are sensitive to human disturbance. Once construction is complete and disturbance levels decline, many of those species would be expected to reoccupy habitats near the facility. During operation, nesting passerines may avoid the area within a few hundred meters of the turbines (Leddy *et al.* 1999), but no species are expected to permanently disappear from Cotterel Mountain.

It has been shown that small birds may avoid the area surrounding the wind turbines, transmission interconnect lines, and roads of wind projects by up to 590 feet (NWCC 2004). Using this 590-foot potential avoidance zone from the Proposed Project features, the area of avoidance for passerines under Alternative B would be approximately 4,485 acres.

Alternative C

The impacts under Alternative C would be similar to, but slightly less than those of Alternative B in terms of the permanent and temporary disturbance footprints. The 180-meter avoidance zone under this alternative would affect approximately 3,700 acres.

Alternative D

The impacts under Alternative D would be similar to, but less than those of Alternative C, and much less than those of Alternative B, in terms of a 180-meter avoidance zone which would be approximately 3,120 acres. The temporary and permanent construction footprints of this alternative would also affect the fewest number of acres of the three action alternatives.

4.6.3 Amphibians and Reptiles

Alternative A (No Action)

Alternative A would not have an impact on amphibians and reptiles at Cotterel Mountain.

Alternative B

Impacts to local amphibian habitats would be expected to be low because the Proposed Project road construction generally would occur outside of the riparian habitat where amphibians would occur. Less than one percent of the riparian habitat would be impacted from road construction. Impacts to reptilian habitat would be expected to be moderate because the Proposed Project would generally occur within rocky areas, including blasting which could alter thermal attributes of snake hibernation sites and potentially make them unusable or it could create additional snake hibernation sites. In addition, local mortality impacts are expected to be high because many reptiles are attracted to warm roads during the summer and thus are expected to experience higher fatality rates from vehicles.

Alternative C

Expected impacts to amphibians and reptiles would be similar to those of Alternative B.

Alternative D

Impacts to amphibians and reptiles would be similar to those of Alternative B and Alternative C, although the area of ground disturbance would be lowest under this alternative and it would likely have the least impact of the action alternatives on amphibians and reptiles.

4.6.4 Bat and Bird Fatalities from the Operations of the Proposed Wind Project

Site selection is the best recommended method to avoid bird and bat fatalities. Wind power project sites should be selected that have low habitat diversity, low species diversity, low numbers and abundance of bats and birds and should avoid areas with special status species such as rare or federally protected species (USFWS 2003). The Cotterel Mountain site has high biodiversity in both habitat and species, supports sage grouse leks, is adjacent to a designated Globally Important Birding Area, and provides big game winter range. Therefore, methods other than site selection would be used to manage the bat and bird fatalities that could occur as a result of the Proposed Project. The primary method for decreasing bird and bat fatalities at the Cotterel Mountain site would be the application of adaptive management (See Section 2.5.4).

Wind power projects may have effects on wildlife, particularly avian species and bats, depending upon the location, geography, and natural setting of the project site. In the context of other sources of avian mortality, it does not appear that wind power is responsible for large numbers of bird deaths (USGAO 2005). While we do not know a great deal about relative impacts of bat mortalities relative to other sources, significant bat mortality from wind power has occurred in Appalachia (USGAO 2005). Long-term effectiveness monitoring of the Proposed Project (five years or greater) will assist in understanding the relationships between the Proposed Project design, and operation of the facility and its effects on wildlife. These effects can occur in a variety of ways but based on data collected from other wind farms, are chiefly associated with bird collisions with the large propellers that drive each of the wind turbines (referred to as the rotor swept area of each turbine).

Long-term monitoring is also necessary to determine how the characteristics of the Proposed Project and its turbines affect the behavior and migration of birds and bats and to determine if there are certain turbines along the string that are contributing to bird and bat mortality that would trigger the need to implement management actions to reduce these effects. The Applicant and BLM recognize that effectiveness monitoring results may require operational changes or adaptive management actions and will work cooperatively with the U.S. Fish and Wildlife Service (USFWS) and IDFG to develop adaptive management actions that will address wildlife mortality if it occurs. Adaptive management tools that are available to the Applicant and BLM include, but are not limited to: timing stipulations during construction, operational changes of turbines, siting considerations, lighting scenarios, and color schemes. These adaptive management tools are addressed in Appendix D.

Many existing wind power projects that have multiple strings of wind turbines stacked one behind another creates a "gauntlet" for birds and bats. Mortality factors increase in these maze-like wind farm layouts where there can be multiple risks to birds and bats that attempt to navigate through them. Recent data at other wind energy sites across the country that have these layouts (including Altamont and Stateline) have identified "problem turbines" that often cause the majority of bird and bat mortalities (Erickson, et. al., 2004).

The Proposed Project involves only one linear string of towers with the towers being approximately one-quarter mile apart. In addition, the proposed Cassia RMP amendment is specific to the Proposed

Project only, and no other wind energy projects will be permitted on Cotterel Mountain. This would eliminate the possibility of the “gauntlet” effect on birds and bats in the future.

Understanding how a wind power generating facility functions facilitates an understanding of the potential effects to resources and other public use of the area and aids in developing responsive management strategies to avoid, reduce and mitigate these effects wherever possible along the turbine string. The Proposed Project is projected to operate at 0.35 (35%) capacity factor under optimum wind conditions. This means that the Proposed Project generates 0.35 (35%) of its total nameplate capacity over time because the wind does not always blow at a speed high enough to turn the blades of the turbines and generate electricity; and at times it blows so fast, i.e., during storms, that the blades are feathered or braked (stopped). This is not to say that all of the turbines in a project are running 35 percent of the time or that they all are not running 65 percent of the time. Each turbine functions independently of each other. The turbine blades begin to turn when the wind reaches speeds of approximately eight to nine miles per hour or greater. When wind speeds exceed approximately 55 miles per hour, the blades are feathered and turned out of the wind.

Naturally, wind speeds are variable along the length of a mountain ridge. As you move along a 12 to 14 mile turbine string, as is proposed on Cotterel Mountain, each turbine turns independently of the others according to the wind speed at its location. The observer will normally see that some turbines are turning and others are not turning at any given time. Rarely would all the turbines be either generating at full capacity or not turning at the same time. Each turbine operates as a single entity; some may generate more electricity and others only less because of their location on the mountain (it is only the overall Proposed Project average that is 35%). In summary, it is difficult to predict at what time and how long any one turbine would be turning. There is, however a general difference between diurnal and nocturnal wind patterns.

Migratory Bats

Most studies have shown that the majority of bat mortalities at wind plants are long-distance migratory tree and foliage roosting species, such as the hoary bat, little brown myotis, and silver-haired bat. Of these species, the hoary bat has a higher wind turbine impact mortality rate than all other species in the west (Erickson *et al.* 2002; Gruver 2002). The data also show that mortality is almost nonexistent during the breeding season and generally occurs during migration and dispersal in late summer between July and September (Johnson *et al.* 2002; Gruver 2002). The same studies also showed that mortality rates were higher during fall migration than spring. This was attributed to a lower migration concentration because females leave earlier than males in the spring, but not in the fall (Gruver 2002). Studies also indicate that bats follow large migrations of moths during the fall months. Further, it is well documented that these same species have a history of impact mortality with transmission interconnect lines, television and communication towers, and even lighthouses (Erickson *et al.* 2002).

The evidence also shows that resident bats, which are foraging or commuting between roosts, do not make up the bulk of collision mortality (Crawford and Baker 1981; Johnson *et al.* 2000b). This is

based on impact distribution data among turbines and observed forage habitat characteristics. Since resident bats would have a defined flight corridor between roosts, they should exhibit higher densities of fatalities in these corridors, but in a majority of the cases that were studied, there are no patterns; rather, there are no areas of appreciably higher densities in the distribution of fatalities (Erickson *et al.* 2002; Johnson *et al.* 2000a).

In addition to flight corridor data, evidence from foraging behavior demonstrates that it is unlikely that fatalities would occur in resident bat populations (Erickson *et al.* 2000). Normally, bats do not forage at heights associated with turbine activity or in areas associated with wind-turbine projects, since these areas generally are very flat and windy and have reduced insect populations. Rather, they are normally associated with less wind and more water (Johnson *et al.* 2002).

Migratory bat species may be more likely to be involved with collision mortality events because they fly higher in the air and in denser clusters when migrating (Harvey *et al.* 1999). This not only puts the bats at a height associated with the turbines rotor swept area, but because they migrate in groups, their ability to use echolocation is affected (Griffin 1970). Evidence also shows that fatality events during migration may be dependent on the surrounding habitat. Studies done at Foote Creek Rim (Wyoming) and Buffalo Ridge (Minnesota) wind plants have shown an inverse relationship between the number of turbine mortalities and the distance to the nearest woodland habitat (Erickson *et al.* 2002; Johnson *et al.* 2000b). There are woodlands (juniper and mountain mahogany) in the immediate vicinity of some of the proposed turbines. The same studies also showed that turbines with lights mounted on or near the turbines did not cause appreciably higher numbers of fatalities.

Based on the available information, larger, less maneuverable, migrating species are primarily associated with wind turbine mortality events. In addition, those species, most notably hoary and silver haired bats in the western U.S., migrating in large colonies in late fall, make up the majority of fatalities observed and recorded (Erickson *et al.* 2002; Johnson *et al.* 2000a). Although there have been limited quantifiable data about wind turbine/bat collision effects on bat populations, qualitative and circumstantial data suggest that turbine mortalities do not appreciably contribute to population declines (Erickson *et al.* 2002), at least in the west.

Resident Bats

Cotterel Mountain has three known bat species (western small-footed myotis, long-eared myotis, and pallid bat) that may be affected by disturbances from construction or impact caused mortality from turbines. Other bat species may occur, but have not yet been identified. If bat hibernacula or nursery colonies are present in the cliffs and rock outcrops along Cotterel Mountain, blasting and/or drilling during construction could disturb bats and cause temporary or permanent abandonment of these areas during the hibernating or nursery season.

Alternative A (No Action)

Alternative A would not adversely affect resident bats on Cotterel Mountain.

Alternative B

The construction of turbine foundations and roads would directly affect only about one acre of rock outcrop within the Proposed Project area. However, noise and percussion from blasting, drilling, digging, and movement of large vehicles could affect roosting, breeding, or hibernating bat species. Once construction is complete and disturbance levels decline, displaced bat species would be expected to reoccupy roosting habitats near the facility. Therefore, the primary potential impact to bat species from the Proposed Project would be to those species attempting to rear young and hibernate within rock outcrops near the construction sites both from potential displacement and potential impact mortality due to turbine proximity to cliff areas.

Of the three species of bat known to occur on Cotterel Mountain, the western small-footed myotis is the only species that hibernates winter-long (one of the last species to start) and uses rock outcrops and caves as primary roosting, breeding, and hibernating habitat. Construction activity from late May or June through early July should not result in any direct or indirect impacts to western small-footed myotis.

The long-eared myotis is normally found near open water and roosts/hibernates in trees (IDFG 2002). Pallid bats are also found near open water, and generally do not hibernate. Both of these species are less likely to be affected adversely by Proposed Project construction.

No turbine impact caused mortality has been recorded for western small-footed myotis, long eared myotis, and pallid bat at any other wind plant. Therefore, impacts from operation of the Proposed Project should be low to these species.

Alternative C

Impacts would be similar to that of Alternative B, but to a lesser extent.

Alternative D

Impacts would be similar to that of Alternative B and Alternative C, but would be the smallest of the three action alternatives.

Birds

Based on the results of fatality monitoring at other wind plants throughout the west, the degree of collision risk to birds at wind plants appears to be species-specific. For example, fatalities of ravens, turkey vultures, and ferruginous hawks are rare, while fatalities of American kestrels, red-tailed hawks, and horned larks are more common. The selection of a wind power project site in specific types of habitat, number and diversity of birds in the area, and the behavior of an individual species plays a large role in its risk of collision (USFWS 2003). Passerines are the most frequent fatality recorded at wind plants and often comprise more than 80 percent of the fatalities recorded in modern wind plants in the west (Erickson et al. 2001b).

Flight heights recorded in the field during point counts and diurnal fall migration surveys were analyzed to produce risk indices for each species and combined to produce overall indices for each group, although it must be recognized that there is variability within each group. Avian risk indices were calculated by turbine type for the avian and fall migration studies. Risk was calculated by multiplying use, expressed as the average number of birds of that group observed per plot survey, by the proportion of those birds that were observed flying, by the proportion of those flying birds that flew within the rotor swept area of that turbine. The risk indices for each group are therefore the average number of flying birds observed, per plot survey that flew within the rotor swept area of that turbine type.

Vertical risk indices were calculated from point count and diurnal fall migration data by multiplying percentages flying within the vertical rotor-swept area (RSA) by use. These risk indices varied among species, and were fairly similar among turbine types (Sharp *et al.* 2005). The vertical risk estimates for individual species varied from zero for sage-grouse, chukar, and pinyon jay to higher levels in the 0.2 to 0.8 range for the red-tailed hawk, turkey vulture, northern harrier, and a high of 0.6 to 3.8 for the common raven during point counts and diurnal fall migration, respectively. The American kestrel risk was in the lower range around 0.05 during the year long point counts and in the higher 0.1 to 0.2 range during the fall migration surveys, presumably because migrating birds flew higher than resident, hunting birds. The common raven, red-tailed hawk, turkey vulture, northern harrier, and American kestrel were the five species with the highest risk indices based on data from both the yearlong point counts and the fall migration surveys. Among passerines, swallows, unknown passerines, pine siskins, mountain bluebirds, and gray-crowned rosy finches had the highest risk indices. Tables 4.6-3 and 4.6-4 provide summaries of the risk indices by group, from the yearlong point counts and fall migration surveys, respectively. Risk indices by species are presented in the Proposed Project technical report for biological resource impacts (Sharp *et al.* 2005).

Table 4.6-3. Vertical Risk Indices by Avian Group and Turbine Type Based on Year-long Point Counts.

Avian Group	Vertical Risk Indices by Turbine Diameter Type and Group					Overall Use
	70-meter	77-meter	80-meter	92-meter	100-meter	
Corvids	0.51	0.48	0.60	0.55	0.60	0.830
Doves	0.05	0.03	0.05	0.04	0.05	0.103
Gulls	0.07	0.07	0.07	0.07	0.07	0.101
Others	0.04	0.02	0.04	0.03	0.04	0.145
Passerines	2.654	1.86	2.70	2.56	2.70	5.857
Raptors	0.82	0.92	1.02	0.97	1.02	1.347
Upland game birds	0.04	0.00	0.04	0.00	0.04	0.105

These risk calculations, however, do not account for the fact that the majority of birds must see turbines and avoid them, since birds are always present at wind plants in varying numbers, and the number of fatalities recorded is small, estimated to range between zero and four birds per turbine per year in the west (Erickson *et. al.*, 2002). For example, a comparison of spring radar data and

nighttime fatality estimates at the Stateline (Washington/Oregon), Buffalo Ridge (Minnesota), and Nine Canyon (Washington) wind plants indicated that between less than 0.01 percent to 0.08 percent of the targets passing through the area resulted in fatalities (NWCC 2004).

Table 4.6-4. Vertical Risk Indices by Avian Group and Turbine Type Based on Fall Migration Surveys.

Avian Group	Vertical Risk Indices by Turbine Diameter Type and Group					Overall Use
	70-meter	77-meter	80-meter	92-meter	100-meter	
Corvids	3.49	3.35	3.86	3.71	3.86	5.345
Doves	0.57	0.27	0.57	0.27	0.57	0.685
Others	0.02	0.02	0.02	0.02	0.02	0.025
Passerines	1.20	1.01	1.23	1.11	1.23	2.020
Raptors	1.81	1.82	2.27	2.07	2.29	3.398
Upland game birds	0.00	0.00	0.00	0.00	0.00	0.123

Avian Risk Indices were calculated by turbine for all birds observed flying in the avian and fall migration studies. The overall use in these tables is the average number of birds of that group observed per plot survey. Vertical Risk was found using the formula:

Vertical Risk = Use * Proportion of Birds Flying * Proportion of Birds Flying in the RSA

Flight direction patterns mapped on Cotterel Mountain showed that large birds moved predominantly southward during the fall, based on point count and fall migration survey data (TBR 2004). Flight directions during the spring, and of small birds, however, did not show such strong trends. The point count flight path maps showed that a fairly large proportion of raptor flight paths were parallel to and offset from the ridgetop where the turbines are proposed. The fall migration data showed some species-specific tendencies in terms of flight paths. Sharp-shinned hawks and Cooper's hawks tended to be to one side or the other of the ridgetop, and American kestrel flight paths were often to the west of the ridgetop. The flight paths of other species appeared to be somewhat uniformly distributed over the Proposed Project area.

Nesting Raptors

The aerial raptor nest surveys documented an average of 0.32 active large raptor nests per square mile (mi²) in the 68-square-mile raptor nesting survey area (excluding ravens and ground nesters such as northern harrier). The raptor nesting density in the raptor nesting survey area at Cotterel Mountain is slightly higher than raptor nesting densities recorded for other wind projects located in Colorado, Oregon, Washington, and Wyoming. These other wind projects reported nest densities ranging from 0.03 to 0.30 nests per mi², with a median density of 0.16 nests per mi² (n = 28) (Erickson *et al.* 2001b). This higher nesting density for raptors at Cotterel Mountain is attributed to the differences in habitat and topographic features between Cotterel Mountain and these other wind projects. Cotterel Mountain habitat is comprised of forested juniper and mountain mahogany with an abundance of cliffs. Habitat within the other projects was predominantly dry, open grassland and active, dry agriculture where the scarcity of trees and cliffs present raptors with few suitable nesting opportunities. Table 4.6-5 lists the comparative raptor nesting survey data. Potential raptor fatalities are of concern at the Proposed Project area, because both the nesting density of 0.32 active nests per

mi² and rates of use (1.3 raptors per 20-minute survey) are relatively high, compared to that at other western wind plant sites (TBR 2004).

Alternative A (No Action)

Alternative A would not result in any impacts on raptor populations.

Alternative B

The impact of Alternative B on nesting raptors would depend on a number of factors including the construction methods used, the proximity of the construction to the nest, the noise level, and whether the construction activity is visible to the birds in the nest. Blasting during the nesting season would have the highest likelihood of causing abandonment of raptor nests. Resident hunting raptors may avoid the vicinity of the turbines and in combination with the habitat lost to construction have a slightly smaller prey base available within their territories. This reduction could affect the productivity or survival of individual pairs of birds. Golden eagles and prairie falcons nest among the cliffs very near the Proposed Project. Construction and Proposed Project operations would be precluded within a one-quarter mile circle around known golden eagle nest locations.

Based on the 2003 raptor nest survey, the closest ferruginous hawk nest would be located over one mile from the Proposed Project construction under Alternative B. Therefore, ferruginous hawks nesting along the lower portions of the east slope of Cotterel Mountain would likely not be affected by the construction or operation of the project under Alternative B.

Other nesting raptor species including red-tailed hawk, Swanson's hawk, northern harrier, sharp-shinned hawk, prairie falcon, and owls nest closer to areas that would be under construction under Alternative B of the Proposed Project. If construction is started prior to these species initiating nesting, they would either find alternative nest sites, not nest, or habituate to the increased activity and nest as normal. If construction is started after nesting has been initiated then these species could be displaced from their nests during the construction period under Alternative B. The operational phase of the Proposed Project could result in reduced number of raptors nesting on Cotterel Mountain.

Alternative C

The impacts of Alternative C would be similar to that of Alternative B. However, under Alternative C, the transmission interconnect line would pass directly adjacent to two ferruginous hawk nests located along the existing Raft River transmission line (Figure 3.2-7). Construction of the transmission interconnect line in the vicinity of these nest sites during the nesting season would potentially result in abandonment of the nest by these birds. The operation of the transmission interconnect line would not impact nesting ferruginous hawks.

Table 4.6-5. Raptor Nesting Density Comparisons.

Project	Project Site	Habitats	Year	Nest Sites	Density Comparison (nests/mi ²)	Comments
Cotterel, ID	Cotterel, ID	Sagebrush and native grasses, juniper and mountain mahogany, some aspen, cliff faces	2003	22	0.32	All active and probably active nests, excluding ravens and ground nesting species such as harriers, and including turkey vultures
Condon, OR	Condon, OR	Primarily dry agriculture, shrub-steppe, and grasslands; scarce upland trees; rare riparian habitats; a few very small wetlands and residential areas.	2000	19	0.04	Raptors and ravens (no ground species)
			2000	13	0.03	Raptors (no ground species)
Kenetech and CARES Wind Farm, OR/WA	Kenetech and CARES Wind Farm, OR/WA	Rangeland, shrub-steppe, rounded loess hills, basalt outcropping and cliffs, some riparian habitat, some cropland and woodland, "natural landscape"	1994	16	0.30	Hawk, owls, eagles
Maiden Wind Farm, WA	Maiden Wind Farm, WA	Grassland/shrub-steppe, dryland agriculture (wheat), CRP pastures, "natural landscape"	2001	55	0.23	Active raptor and raven nests (did not include ground dwelling species (northern harriers, short-eared owls, and burrowing owls)
			2001	38	0.16	Only active raptor nests (not including ground species)
Ponnequin Wind Energy, CO	Ponnequin Wind Energy, CO	Gently rolling, short/mid grass prairie	1997	27	0.16	Raptor nests includes unknown species
			1998	16	0.10	Active raptor nests, includes unknown species

Table 4.6-5. Raptor Nesting Density Comparisons.

Project	Project Site	Habitats	Year	Nest Sites	Density Comparison (nests/mi ²)	Comments
Seawest Windpower Project, WY	Foote Creek Rim	Natural landscape	1995	56	0.15	Active raptor nests
			1997	83	0.22	
			1998	70	0.18	
			1999	70	0.18	
	Simpson Ridge		1995	87	0.16	
			1997	96	0.17	
			1998	97	0.18	
			1999	93	0.17	
	Morton Pass Reference		1995	40	0.07	
			1997	37	0.07	
The Stateline Project OR/WA	Wind Resource Area	Grazed shrub-steppe, CRP seeded pastures, cultivated wheat fields	1995	8	0.10	Active nests, hawks and owls
			2000	16 to 18	0.20 to 0.23	Active nests, hawks, owls, unknown raptor, unknown large birds
	WRA (blue)		2000	11	0.14	Active nests, no unidentified birds, nor burrowing owls
	Reference Area		1995	13	0.15	Active nests, hawks, unknown raptors, owls
	Oregon	Non-irrigated agriculture, wheat and cattle grazing,	2001	50	0.24	Active nests, buteos, falcons, owls
TPC Oregon Wind Power Development						

Table 4.6-5. Raptor Nesting Density Comparisons.

Project	Project Site	Habitats	Year	Nest Sites	Density Comparison (nests/mi ²)	Comments
Stateline, OR	---	"agricultural landscape"	2001	19	0.213	Raptors (buteos, eagles, great horned owl), no ground species (northern harriers, short-eared owls, burrowing owls)
Klondike, OR	----	"agricultural landscape"	2001	3	0.060	
Nine Canyon, WA	----	"agricultural landscape"	2001	4	0.158	
Zintel Canyon, WA	----	"agricultural landscape"	2001	4	0.033	
Buffalo Ridge, MN	----	Agricultural crops (corn, soybeans, grains, hay,) and Conservation Reserve Program fields (grasslands), small areas of woodlots and wetlands, "agricultural landscape"	Unknown	Unknown	0.153	

Nest Densities as Reported by West, Inc. (Erickson *et al.* 2001a)

Raptors only, excludes inconspicuous ground species

Alternative D

The impacts of Alternative D would be very similar to that of Alternative B and Alternative C. Under Alternative D, there would be fewer turbines constructed. There would be no turbines constructed along the east ridge of Cotterel Mountain. This would result in reduced potential impacts to nesting raptors along the east ridgeline area. The two golden eagle nests located at the north and south end of the east Cotterel Mountain ridgeline would be avoided. Overall, there would be a reduced potential for disturbance to nesting raptors from construction activities and there would be no O&M activities in this area.

Under Alternative D, potential project impacts to ferruginous hawks would be the same as those described under Alternative C.

Waterfowl, Shorebirds, and Waders

Alternatives B, C, and D.

This group of species is not expected to be measurably affected by any of the Proposed Project alternatives, because only limited suitable habitat is present within the Proposed Project area. On Cotterel Mountain only a very few migrants of this group were observed during on-site avian surveys (TBR 2004). There would be the potential for migrating individuals from this group to occasionally pass over Cotterel Mountain. However, this would be expected to be rare and would not be expected to result in a measurable affect on any local or regional population of this group of species.

Alternatives C and D

Birds in this group have been known to collide with transmission or other utility lines that cross their flight paths. Potential impacts Under Alternative C and Alternative D to this group of birds would be focused along the Snake River where the transmission interconnect line would cross the river. However, the proposed crossing site of the Snake River for the transmission interconnect line is directly adjacent to two existing transmission lines. The proposed third transmission line could result in an increased opportunity for waterfowl collisions with the transmission lines. As discussed in Appendix D, the portion of the transmission interconnect line that crosses the Snake River would be appropriately marked to aid in its visibility to waterfowl and other birds that use this area. This would help to reduce the impact to this group of birds as a result of potential collisions with the transmission interconnect line.

Passerines and Other Small Birds

Radar Data

The radar study conducted during the fall of 2003 (ABR 2004; TBR 2004) indicates that fall nocturnal migration passage rates at Cotterel Mountain are similar to two other locations studied (Stateline and Vansycle wind-energy sites in eastern Oregon; Mabee and Cooper 2002). Flight altitudes were also similar between these sites. Overall, only 3.3 percent of nocturnal targets flew at or below 125 meters above ground level during the fall radar study. Risk of fatality in nocturnal migrants is predicted to be similar to the mortality rates at Stateline and Vansycle, although a direct

comparison cannot be made, as the data from Stateline and Vansycle were collected at a different time and included spring migrants. Further, turbine heights at the Stateline and Vansycle projects are lower than the proposed turbines at the Proposed Project. The passage rates and elevations indicate that the fatality rates for nocturnal migrants would be expected to be similar to rates from eastern Oregon and Washington.

Alternative A (No Action)

Alternative A would not adversely affect birds or bats on Cotterel Mountain.

Alternative B

Table 4.6-6 provides a summary of the estimated ranges of annual fatalities for birds and bats at the Proposed Project, based on the fatality searches conducted in Minnesota, Wyoming, Oregon, and Washington wind plants. The estimated annual fatality range calculations were made three ways: per turbine, per 3000 square meters of RSA, and per megawatt (MW). These three ranges were used based on the findings of the wildlife working group of the National Wind Coordinating Committee (NWCC). This group is comprised of professional biologists conducting post-construction monitoring studies of wind plants. These professionals agree that it was prudent to use three estimates, given the large variation in turbine sizes currently in operation. Relatively few rigorous, standardized carcass searches, which also account for birds missed by the surveyors or removed by scavengers have been conducted, and therefore the range of estimated fatalities that result from these studies is large. This is typical of studies that attempt to obtain a sufficiently large sample of rare events.

Considering data from other projects, it is estimated that annual raptor mortality for Alternative B may range from zero to 63 birds. The estimated number of all bird fatalities may range from zero to 934 per year. The estimated number of bat fatalities may range from zero to 667 per year (Table 4.6-6). In all three cases, the range differs according to the basis of the prediction (number per turbine per year, number per 3000 square meters of RSA, or number per MW).

Additional fatalities may also occur from collisions with overhead electric transmission interconnect lines, although such collisions are expected to be rare. Alternative B is likely to have the lowest mortality from transmission interconnect lines since it includes only nine miles of new transmission interconnect line. Fatalities would be most likely to occur during conditions of low visibility, or if transmission interconnect lines were located in areas where birds regularly flew between destinations, such as between foraging and nesting areas, or between attractive patches of habitat (bird movement patterns).

Table 4.6-6. Estimated Annual Fatality Ranges, by Alternative, for Birds and Bats at the Proposed Project.

Group and Basis for Estimate	Annual Fatality Range Used for Estimate*		Alternative B	Alternative C		Alternative D	
	Low	High		70 meter	77 meter	100 meter	77 meter
Raptors							
Per turbine	0	0.036	0 to 5	0 to 4	0 to 3	0 to 3	0 to 2
Per 3000 sq meters of RSA	0	0.38	0 to 63	0 to 58	0 to 81	0 to 48	0 to 66
Per MW	0	0.265	0 to 52	0 to 39	0 to 64	0 to 33	0 to 52
All birds including raptors							
Per turbine	0	2.8	0 to 364	0 to 274	0 to 227	0 to 230	0 to 185
Per 3000 sq meters of RSA	1.1	5.6	183 to 934	167 to 852	233 to 1188	140 to 713	190 to 968
Per MW	0.9	2.8	176 to 546	132 to 412	219 to 680	111 to 344	178 to 554
Bats							
Per turbine	0	3.2	0 to 416	0 to 314	0 to 259	0 to 262	0 to 211
Per 3000 sq meters of RSA	1	4	167 to 667	152 to 608	212 to 848	127 to 509	173 to 691
Per MW	0.8	3.3	156 to 644	118 to 485	194 to 802	98 to 406	158 to 653
Features of the alternatives							
Number of turbines			130	98	81	82	66
Rotor diameter (meters)			70	77	100	77	100
Total RSA (sq meters)			500,300	456,350	636,174	381,844	518,364
MW per turbine			1.5	1.5	3	1.5	3
Total MW			195	147	243	123	198

Based on data from Erickson *et al.* (2001b).

Alternative C

The impacts of the 147 MW variation of Alternative C would be slightly less than but similar to those of Alternative B. The impacts of the 243 MW variation of Alternative C would be higher (Table 4.6-6). It is estimated that annual raptor mortality at the Proposed Project may range from zero to 58 birds for the 147 MW variation of Alternative C, or zero to 81 birds for the 243 MW variation, based on fatality and use rates from other western wind power projects (Table 4.6-6). The estimated number of bird fatalities for the 147 MW variation of Alternative C is from zero to 852 per year, depending on whether the basis of the prediction was number per turbine per year, number per 3000 square meters of RSA, or number per MW. Bat fatalities are estimated to range from zero to 608 for the 147 MW variation of this alternative, and 0 to 848 per year for the 243 MW variation. The estimated number of fatalities varies, depending on the basis of the prediction: number per turbine per year; number per 3000 square meters of RSA; or number per MW (Table 4.6-6). Fatalities resulting from collisions with overhead electric transmission interconnect lines may be higher than under Alternative B, due to the 19.7 miles of new transmission interconnect line, although this would also be related to the location of the transmission interconnect line in relation to bird movement patterns.

Alternative D

The 123 MW variation of Alternative D would probably cause the lowest number of fatalities of raptors, all birds, and bats, since it has the lowest number of turbines, RSA, and MW. This version of Alternative D is estimated to cause zero to 39 raptor fatalities, zero to 574 all bird fatalities, and zero to 410 bat fatalities per year. Conversely, the 198 MW version of Alternative D is estimated to cause fatality rates very similar to that of the 243 MW version of Alternative C (Table 4.6-6). Fatalities from collisions with transmission interconnect lines would be the same as those under Alternative C because there would also be 19.7 miles of new transmission interconnect line.

4.6.5 Special Status Wildlife Species

Threatened and Endangered Species

Alternative A (No Action)

Alternative A would not impact either of the listed species, gray wolf or bald eagle. This alternative would also not have an impact on sensitive species.

Alternative B

The gray wolf (Threatened, nonessential population) and bald eagle (Threatened) are the only two listed species with potential to occur on Cotterel Mountain and which could be affected by the Proposed Project. Only two bald eagles were observed during the baseline study in the fall of 2003. Wolves or their signs were not observed during the baseline study, and there are no records of wolves on Cotterel Mountain or south of the Snake River. A complete analysis of Proposed Project impacts to bald eagle and gray wolf will be detailed in a biological assessment, which is currently under preparation.

Bald eagles appear to be rare migrants through the Cotterel Mountain area, based on the limited observations made during the baseline study. The habitat is not optimal for eagles due to the lack of large trees needed for perching, nesting and roosting. Mortality or injury is the primary potential impact to bald eagles from the Proposed Project. Mortality could occur from both electrocution and collisions with transmission interconnect lines and turbines blades. Bald eagle mortality from electrocution is not expected to occur because overhead transmission interconnect lines would be designed to discourage raptor perching and the distance between wires would be great enough to prevent eagles from touching two wires at once. In addition, electrical facilities at the two substations would be designed in such a way as to decrease the possibility of bird electrocution.

The potential for bald eagles to be killed by the Proposed Project is unlikely, however, the potential does exist and cannot be discounted. Therefore, the potential for a "take" of a bald eagle(s) must be considered a possibility if the rights-of-way (ROW) for the Proposed Project are granted. As a result, the Proposed Project requires formal consultation under Section 7 of the Endangered Species Act (ESA) of 1973, as amended. A result of that consultation would be a Biological Opinion issued by the USFWS. Take can be authorized in the Incidental Take Statement of the Biological Opinion after the anticipated extent and amount of take has been described, and the effects of the take are analyzed

with respect to jeopardizing the species or adversely modifying critical habitat. The Biological Opinion would also specify reasonable and prudent measures and conservation recommendations to minimize impacts on the bald eagle.

According to available information from the BLM and the IDFG, gray wolves are not known to occur on Cotterel Mountain. Since the reintroduction of the gray wolf to central Idaho in 1996, this species has increased its range and population substantially. During the life of the Proposed Project, it is possible that this species could return to Cassia County and inhabit Cotterel Mountain. If wolves did return, they would be anticipated to avoid human activity and would not likely be affected by the operation of the Proposed Project.

Alternative C

The effects of Alternative C would be similar to those of Alternative B, and are not likely to adversely affect either bald eagles or gray wolves.

Alternative D

The effects of Alternative D would be similar to those of Alternative B and Alternative C, and are not likely to adversely affect either bald eagles or gray wolves.

Special Status Species

Small Mammals

Alternative A (No Action)

Alternative A would not have an impact on any sensitive species.

Alternative B

Under Alternative B, the overall impacts to cliff chipmunk populations would likely be low due to the scattered distribution and extent of potential disturbance. During construction, some areas would likely be avoided or abandoned, but once construction is complete and disturbance levels decline, cliff chipmunks would be expected to reoccupy habitats near the facility. The potential absence of predators due to Proposed Project construction may benefit cliff chipmunk populations.

Alternative C

The impacts of Alternative C to special status species would be similar to those expected to occur under Alternative B, with slightly smaller areas of permanent and temporary impacts from Proposed Project construction and fewer turbines.

Alternative D

The impacts of Alternative D to special status species would be similar to those expected to occur under Alternative B and Alternative C, with slightly smaller areas of permanent and temporary impacts from Proposed Project construction.

Birds

Alternative A (No Action)

Alternative A would not have an impact on any sensitive species.

Alternative B

The impact from Alternative B on special status bird species would be dependent on the species and their associated habitat. Cassin's finch, golden eagle, Brewer's sparrow, prairie falcon, pinyon jay, sage thrasher, northern goshawk, ferruginous hawk, loggerhead shrike, peregrine falcon, plumbeous vireo and green-tailed towhee were all observed within the Proposed Project area during the avian surveys; therefore they are likely to occur within the Proposed Project area during construction and operation.

Nesting and non-breeding golden eagles could be adversely affected not only by construction disturbance, but also from collisions with turbines. Golden eagle fatalities have been recorded at other western wind plants, including the Altamont Pass and Montezuma Hills areas of California. The Altamont Pass golden eagle population has been studied for many years (Hunt 2002), and it is not clear whether the 40 to 60 golden eagles killed there per year is having an adverse effect on local eagle populations. The majority of golden eagles killed at Altamont were non-breeding adults and subadults termed "floaters." These are birds that are looking for territories to occupy and nest in. The nesting population of eagles within 30 kilometers of Altamont has not declined, but the floater population may have declined and floaters are not being produced within this population; therefore, the only source of floaters would be from immigration from other areas (Hunt 2002).

Based on the point count and fall migration survey data, 53 to 70 percent of golden eagles observed flying were within the RSA, depending on turbine type. This indicates that golden eagles could be at relatively high risk of being killed by turbines. Golden eagle use at Cotterel Mountain is approximately four times lower than at the High Winds project. Golden eagle use at Cotterel Mountain is 0.068 birds per 20-minute survey, while it is 0.287 birds at the High Winds project site in the Montezuma Hills in California (Kerlinger *et al.* 2001). One golden eagle fatality was recorded during the first year of monitoring at the High Winds project (Kerlinger *et al.* 2005), which consists of 90, 1.8-MW wind turbines with 80-meter rotor diameters. The High Winds project is used for this comparison because the type and number of turbines at the High Winds project are representative of what would be constructed for the Proposed Project and those at Altamont Pass are not. The approximate rate of expected golden eagle fatalities at the Proposed Project area could be one bird every four years.

Columbian sharp-tailed grouse, long-billed curlew, northern pygmy-owl, and western burrowing owl have historically been observed within the Proposed Project area, but were not observed during the avian survey; therefore, they are not considered likely to occur within the Proposed Project area during the construction phase. Based on the rarity of occurrence of these species and the limited amount of disturbance that would occur within their possible habitat types, it is unlikely that Proposed

Project construction would affect these species. Sharp-tailed grouse could migrate through the Proposed Project area and potentially collide with operational turbine blades.

Although there is potential habitat within the Proposed Project area for the flammulated owl, sage sparrow, grasshopper sparrow, red-naped sapsucker, Virginia's warbler, and calliope hummingbird, there are no recorded observations of individuals or nest sites within the Proposed Project area. It is unlikely that Proposed Project construction would affect these species. These species could migrate through the Proposed Project area and potentially collide with operational turbine blades.

Alternative C

The impacts of Alternative C to special status species would be similar to those expected to occur under Alternative B, with slightly smaller areas of permanent and temporary impacts from Proposed Project construction and fewer turbines. The fatality risk from the turbines, however, may not be less if the total RSA is as high as Alternative B.

American white pelican and black tern nest on the Minidoka National Wildlife Refuge and may use the flight space over Cotterel Mountain during feeding or migration flights. American white pelican have been observed on the Snake River in the vicinity of the transmission interconnect lines proposed crossing location. American white pelican have been known to collide with transmission or other utility lines that cross their flight paths. However, the proposed crossing site of the Snake River for the transmission interconnect line is directly adjacent to two existing transmission lines. Therefore, the transmission interconnect lines proposed under Alternative C would not result in a measurable increase in potential mortality to the American white pelican. Based on the low number of historic observations and lack of habitat, these species are not likely to occur on the Cotterel Mountain, and would not likely be impacted by this portion of the Proposed Projects construction or operation.

Alternative D

The impacts of Alternative D to special status species would be similar to those expected to occur under Alternative B and Alternative C, with slightly smaller areas of permanent and temporary impacts. The fatality risk from the turbines would likely be less because the total RSA would be lower than Alternative B and Alternative C.

Under Alternative D, potential impacts to American white pelican and black tern would be the same as those discussed under Alternative C.

Greater Sage-Grouse

There is incomplete and unavailable information regarding the affects of the Proposed Project on sage-grouse. Because there are currently no wind power facilities in operation close to occupied sage-grouse leks, nesting, rearing, or wintering habitat, there is no case history on which to base impact predictions. As a consequence, this impact assessment is based on case histories of the impacts of new roads and transmission interconnect lines, as well as similar elements (e.g. other types of tall structures). This assessment is conservative because the opinions of experts and the results of research

and anecdotal information on the effects of energy developments to sage-grouse are wide ranging and sometimes conflicting. The actual effects of the Proposed Project are unknown and could range from the extremes of temporary avoidance to extirpation of the local population and loss of use (IWETT 2004).

Impacts of energy development in general, and wind-power generation developments in particular, on sage-grouse are not well known (Braun *et al.* 2002; Manes *et al.* 2003; Connelly 2003, Idaho Sage-grouse Advisory Committee, 2005). Although scientists, conservationists, engineers, and developers speculate on the impacts, rigorous scientific study, which quantifies and demonstrates cause-effect relationships is mostly lacking. For example, the analysis of cause-effect relationships between land uses and population responses was the third highest among the eight key research needs identified for sage-grouse in Oregon (Rowland and Wisdom 2002). The Final BLM Programmatic Wind Energy Development EIS (USDI BLM 2005) discusses a number of construction activities that may adversely affect wildlife (sage-grouse). These include: (1) habitat reduction, alteration or fragmentation, (2) introduction of invasive vegetation (3) injury or mortality of wildlife, (4) decrease in water quality from erosion and runoff, (5) fugitive dust, (6) noise, (7) exposure to contaminants, and (8) interference with behavioral activities.

The primary reason for the nationwide decline in sage-grouse is habitat related, including, habitat loss, habitat fragmentation, and habitat degradation (Connelly *et al.* 2004). It is reasonable to assume any similar changes to sage-grouse habitat on Cotterel Mountain resulting from the development of the Proposed Project would, on a smaller scale, also affect sage-grouse using the surrounding area such as Conner Ridge and Jim Sage Mountain. Whether such effects are measurable is unknown.

Perhaps the single most unknown factor is how sage-grouse, which are accustomed to a relatively low vegetation canopy, would respond to numerous wind turbines hundreds of meters taller than the surrounding landscape. Some scientists speculate such a skyline may displace sage-grouse hundreds of meters or even miles from their normal range (Manes *et al.* 2002; Flake 2003; Connelly 2003; NWCC 2004, USFWS 2003, Idaho Sage-grouse Advisory Committee, 2005). If birds are displaced, it is unknown whether, in time, local populations may become acclimated to elevated structures and return to the area.

Another unknown is how sage-grouse would respond to increased human activity. Certain construction activities would be disruptive, and birds are likely to avoid the immediate vicinity during construction. How post-construction activities associated with O&M would affect grouse is also unknown. It is possible birds would become accustomed to routine activities and may return to the area. Historically small numbers of sage-grouse have used the irrigated lawns at the Central Facilities Area on the Idaho National Engineering and Environmental Laboratory, even though Central Facilities Area has over 50 buildings, 2,000 personnel, and vehicle traffic (Connelly *et al.* 2003).

The sage-grouse inhabiting Cotterel Mountain are using the local habitat that already includes a gravel access road with intermittent traffic, and a cluster of tall communication towers on the mountain summit. The lek closest to this cluster of towers is 0.62 mile away, and the towers are

visible from that lek. One observation made by TREC, Inc. staff during the spring of 2004 indicates that at least some of the sage-grouse are somewhat accustomed to being much closer to some tall structures. Several males were observed displaying directly beneath a meteorological tower located within several hundred meters of an active lek. These meteorological and communication towers, however, are very different from a wind turbine, which would be much larger and have parts in motion.

The direct loss and fragmentation of habitat associated with noise disturbances from vehicle traffic and construction have been shown to reduce attendance at sage-grouse lek sites and lower female nest initiation in proximity to these sites. According to one study that specifically addressed noise impacts on sage-grouse leking sites, noise disturbances within 660 feet of a lek site generally resulted in a loss of attendance. As the distance increased from the source of noise, the number of leks with reduced attendance decreased (Braun *et al.* 2002). Similarly, female sage-grouse were found to move greater distances from leks near noise disturbances, and had lower rates of nest initiation in areas disturbed by vehicle traffic (Lyon and Anderson 2003). Therefore, sage-grouse leks located within 660 feet of wind turbines and Proposed Project roads could experience reduced attendance as a result of noise generated from the Proposed Project features. Likewise, suitable nesting habitat located within 660 feet of the Proposed Project roads and turbines could be made unavailable to sage-grouse due to avoidance as a result of Proposed Project generated noise.

Following is a summary of some of the existing research results relevant to potential impacts of the Proposed Project. A more complete summary and critique of a wider spectrum of sage-grouse research through 2001 can be found in Rowland and Wisdom (2002) and Connelly *et al.* (2004).

Energy Development:

- Sage-grouse were displaced or otherwise disturbed by oil development and coal mining activities (Braun 1987; Braun 1998; Aldridge 1998; Lyon and Anderson 2003).
- There is some evidence that once the activities ceased numbers returned to pre-disturbance levels (Braun 1987; Remington and Braun 1991).
- Other studies showed a continued disruption of the nesting behavior (Lyon 2000).
- Braun (1998) noted that populations did not attain pre-disturbance levels.
- Removal of vegetation for well sites, access roads, and associated facilities can fragment and reduce the availability of suitable habitat (Aldridge 1998).
- There were fewer males on leks within 0.4 kilometer (0.25 mile) of wells versus counts of males on less disturbed sites (Braun *et al.* 2002).
- Mining activities at a surface coal mine contributed to a drop in male sage-grouse attendance at leks closest to the mining activity and, over time, altered the distribution of breeding grouse (Remington and Braun 1991).

Fences and Transmission Interconnect Lines:

- Sage-grouse in some areas avoid fences, possibly because they are used as perches by avian predators (Braun 1998).
- Fences and transmission interconnect lines pose hazards because they provide additional perch sites for raptor predators (Ellis 1987; Call and Maser 1985; Braun 1998).
- Sage-grouse could be injured or killed by flying into fences and transmission interconnect lines (Call and Maser 1985; Braun 1998).
- Woven-wire fences are more dangerous to sage-grouse than one-to-three wire-strand fences (Braun 1998).
- Moving away from the transmission interconnect line, numbers of sage-grouse increase for up to 600 meters (0.37 mile) and then level off (Braun 1998).

Habitat Fragmentation:

- Construction of roads, fences, reservoirs, ranches, farms, and housing developments resulted in habitat loss and fragmentation (Braun 1998).
- Man-made structures such as fences, roads, and transmission interconnect lines fragment habitats; sage-grouse avoid these sorts of disturbed areas (Rowland and Wisdom 2002).

Roads/Highways/Vehicles:

- Roads and vehicles result in loss of habitat and direct mortality, and may result in reduction of sage-grouse use of leks within one kilometer (0.8 mile) because of noise (Braun 1998).
- Sage-grouse have been documented to be impacted by vehicles during all seasons (Braun 1998).
- In Wyoming, successful hens in a natural gas field nested farther from roads than did unsuccessful hens (Lyon 2000).
- Light traffic disturbance (one to 12 vehicles/day) near leks during the breeding season might reduce nest-initiation rates and increase distances moved from leks during nest-site selection (Lyon and Anderson 2003).
- More heavily used roads and highways result in direct mortalities of sage-grouse, and contribute to habitat fragmentation (Patterson 1952).
- Sage-grouse have also been known to form leks on well-used roads (Patterson 1952).
- Roads and associated human disturbances can have adverse impacts, especially to lek and winter habitat areas (Wisdom *et al.* 2000).
- Road density in the interior Columbia Basin was higher in range from which Sage-grouse were extirpated, and lower in occupied range (Wisdom *et al.* 2002).
- In Wyoming, it was determined that there was no decrease in sage-grouse lek attendance due to the construction or operation of a large wind turbine in the vicinity of active leks (Yeo *et al.* 1984).

- As the distance increased from the source of noise, the number of leks with reduced attendance decreased (Braun et al. 2002).
- Female sage-grouse were found to move greater distances from leks near noise disturbances, and has lower rates of nest initiation in areas disturbed by vehicle traffic (Lyon and Anderson 2003).

Wind Turbines:

- The effects of construction and operation of the Foote Creek Rim wind power project in Wyoming on sage-grouse could not be documented because no active leks were present on the project site before or during construction (Johnson 2000b).
- Avian mortality monitoring over three years at the Foote Creek Rim wind power project in southern Wyoming found no sage-grouse fatalities (Young *et al.* 2003).

Disturbed/Cleared Areas:

- Sage-grouse used disturbed areas (two gravel pits and one recent burn) as leks (Connelly *et al.* 1981).

Alternative A (No Action)

Alternative A would not have impacts on sage-grouse.

Alternative B

Under Alternative B, approximately 261 acres of potential sage-grouse habitat would be directly affected by the Proposed Project. Turbines and roads would be sited within one-quarter mile of all six known sage-grouse leks on Cotterel Mountain. In Wyoming, it was determined that there was no decrease in sage-grouse lek attendance due to the construction or operation of a large wind turbine in the vicinity of active leks (Yeo *et al.* 1984). However, mining activities at a surface coal mine contributed to a drop in male sage-grouse attendance at leks closest to the mining activity and, over time, altered the distribution of breeding grouse (Remington and Braun 1991). A relative of the sage-grouse, the lesser prairie chicken that also uses leks for breeding activities, abandoned 83 percent of their leks and nesting sites when associated with anthropogenic features such as gas and oil rigs. Since the Proposed Project would result in the siting of roads and turbines within one-quarter mile of active sage-grouse leks, it is likely that their presence would result in some level of impact to sage-grouse on Cotterel Mountain. Leks located adjacent to existing or newly constructed Proposed Project roads could experience additional disturbance from increased traffic due to operation activity and increased public access.

A slight increase in sage-grouse mortality could result from collisions with wind turbines, transmission interconnect lines, and vehicles. Sage-grouse using Cotterel Mountain may collide with the transmission interconnect lines and with the lower reaches of the moving rotors. However, given the relative infrequency of sage-grouse flights (i.e., usually limited to escape reactions, movements to

foraging areas, short elevation migrations), it is unlikely that these collisions would be numerous or result in an impact to the Cotterel Mountain population. None of the sage-grouse observed flying were within the RSA of any of the turbine classes during the point counts or fall migration surveys. Collisions with vehicles are more likely, however, it is assumed that maintenance personnel would be trained to be sensitive to the presence of sage-grouse and drive slowly to prevent collisions.

Sage-grouse have an extreme fidelity to their lek sites. Due to this fidelity, sage-grouse on Cotterel Mountain would likely continue to attempt to use leks in the vicinity of the Proposed Project following its construction. New birds added to the Cotterel Mountain sage-grouse population would likely be displaced by the Proposed Project to existing leks and habitat in the surrounding area if available.

Based on the best available science for the protection of sage-grouse and their habitat it has been recommended that energy facilities should not be developed within a 1.8 mile radius of sage-grouse leks (Connelly *et al.* 2000). Therefore, under Alternative B, it could be assumed that all 26,644 acres of potential sage-grouse habitat within 1.8 miles of the Proposed Project area could be affected (Table 4.6-7). While potential habitat would remain mostly undisturbed, sage-grouse may be displaced due to disturbance from the Proposed Project construction and operation. This does not take into consideration topographical or micro-habitat features of the area that may protect or reduce potential disturbance from the Proposed Project.

Table 4.6-7. Potential Sage-grouse Habitat Loss from the Proposed Project.

Alternative and Impact	Sage-grouse habitat types				
	Breeding (Leks)	Nesting	Brood- Rearing	Wintering	Total
Alternative B					
Permanent impacts from Proposed Project footprint (acres)	84	33	76	68	261
Potential displacement impacts within 1.8 miles of the Proposed Project (acres)	3,395	5,605	11,209	6,435	26,644
Alternative C					
Permanent impacts from Proposed Project footprint (acres)	77	28	28	48	181
Potential displacement impacts within 1.8 miles of the Proposed Project (acres)	3,345	4,980	9,936	5,716	23,977
Alternative D					
Permanent impacts from Proposed Project footprint (acres)	52	15	13	34	114
Potential displacement impacts within 1.8 mile of the Proposed Project (acres)	3,255	3,194	8,734	4,585	19,768

Alternative C

Under Alternative C, approximately 181 acres of sage-grouse habitat would be directly affected by the Proposed Project (Table 4.6-7). This alternative would affect 30 percent less acres of sage-grouse habitat than Alternative B. However, turbines and roads would still be sited within one-quarter mile of all known sage-grouse leks on Cotterel Mountain. Therefore, impacts to sage-grouse would be similar to those described under Alternative B.

Under Alternative C, sage-grouse could be displaced from 23,977 acres of potential habitat from the area within 1.8 miles of the Proposed Project. This alternative would affect ten percent fewer acres of potential sage-grouse habitat than Alternative B. Whether the reduced level of affected potential habitat from that estimated for Alternative B would result in lower levels of impact to sage-grouse is unknown, as it would depend on the nature of the reaction of the grouse to the Proposed Project features.

Alternative D

Under Alternative D, approximately 114 acres of sage-grouse habitat would be directly affected by the Proposed Project (Table 4.6-7). This alternative would affect 57 percent fewer acres of sage-grouse habitat than Alternative B and 38 percent less than Alternative C. Turbines and roads would be sited within one-quarter mile of four of the six known sage-grouse leks and no turbines or roads would be sited along the east ridgeline of Cotterel Mountain. This would avoid potential impacts to two sage-grouse lekking areas. Overall, there would be a reduced potential for disturbance to sage-grouse from construction activities and there would be no O&M activities along the east ridge area.

Within 1.8 miles of the Proposed Project, sage-grouse could be displaced from 19,768 acres of potential habitat under Alternative D. This would affect 36 percent fewer acres of potential sage-grouse habitat than Alternative B and 18 percent fewer acres than Alternative C. There would be no impact to two sage-grouse leks or nesting or brood rearing habitat along the east ridgeline of Cotterel mountain.

4.7 HISTORIC AND CULTURAL RESOURCES

There are three possible effects that can occur to cultural resource sites as defined by 36 CFR 800:

- **No Effect:** If a site, which is eligible for or listed on the National Register of Historic Places (NRHP), is avoided, with a suitable buffer zone, which would assure that no disruption or visual intrusion would occur to the site. Sites which are ineligible for inclusion on the NRHP would usually have No Effect determinations although additional information from the site may be needed after the initial evaluation, such as sample collections or detailed mapping, as determined by the BLM guidelines.
- **No Adverse Effect:** A site which is listed on or eligible for the NRHP may have possible adverse effects mitigated through actions as stipulated in a mitigation plan that is reviewed by the BLM and State Historic Preservation Office.

- **Adverse Effect:** A site which is listed on or eligible for the NRHP, that has unmitigatable effects taking place, requires that a "Section 106 Compliance Case Report" is completed that details the impacts. This Case Report is reviewed by the Advisory Council on Historic Preservation and the State Historic Preservation Office, which results in a Memorandum of Agreement. A case report must be completed on each site so affected.

An intact section of the Oregon Trail National Historic Trail (10CA862) at the north end of the Proposed Project area was previously identified within the Area of Potential Affect (APE). Another intact section of the trail, outside the Proposed Project area, is approximately four miles east of the previously documented Oregon Trail section. An intact section of the California Trail, east of the southern end of the Proposed Project area outside the APE, was previously identified and considered historic. The trail extends in a northerly direction and is approximately three miles from proposed turbines (Figure 3.3-1). Although no direct adverse impacts on these intact sections of the trail are expected as a result of the construction and operation of the Proposed Project, there are indirect visual effects on the experience of the users of these historic trails.

A 2004 aerial photograph indicating the potential locations of the wind turbines and a photographic simulation showing the wind turbines from a key viewing areas (Key Observation Points; see Section 4.13) were used to evaluate the visual impacts of the Proposed Project on the intact segments of the Oregon and California Trails.

4.7.1 Alternative A (No Action)

Implementation of Alternative A would have no effects on cultural resources.

4.7.2 Alternative B

Prior to the initiation of any activity, all resources that are currently evaluated or recommended as "Eligible" will have sufficient data collection so that a formal Eligibility Determination may be completed. Those deemed "Not Eligible" will have archival collection and documentation completed prior to disturbance or destruction.

Alternative B would result in the Proposed Project having a range of impacts on sites within the (APE), ranging from no effect (avoidance) to high impact (adverse effect or loss of integrity). Specific impacts to each site would be addressed on an individual basis after proximity of the site to the disturbance was defined more specifically (i.e., practicability of complete avoidance was addressed). Only complete avoidance of all sites would result in the Proposed Project having no effect. While it is likely that at least some sites located within the APE would be avoided, it is more likely that not all would be avoided. As necessary, additional site evaluation would be completed and an assessment of effect would be determined per 36 CFR 800. Mitigation, also determined on an individual site basis, would be required for any unavoidable NRHP listed or eligible site in order to reduce impacts from the Proposed Project.

Alternative B would have no impact to sites CM-S-5, CM-S-16, CM-S-20, or CM-S-22, since each of these is located outside of the APE and would be avoided. Impacts to the remaining 23 resources, and to any sites discovered during additional survey of the transmission interconnect lines and access roads, would range from no impact to adverse effect depending on if the site is eligible not.

At least three sites recommended as NRHP eligible would be subject to adverse effects if they were not avoided during Proposed Project construction. These properties include prehistoric sites CM-S-2, CM-S-3, CM-S-6/8, and CM-S-21, defined by lithic scatters. In addition, remnants of the NRHP listed Oregon National Historic Trail (10CA862) are located in the Proposed Project area and may be subject to adverse effects if the Proposed Project is unable to avoid impacts to the trail. Indirect visual impacts to intact segments of this resource that are located outside of the APE are addressed in Section 4.13.

Though the Northside Alternate of the Oregon National Historic Trail (10MA273) is eligible for nomination to the NRHP, the Proposed Project would have no direct impact to this site because physical evidence of the linear trails is not present in the APE. The Northside Alternate of the Oregon Trail would have bisected the northernmost portion of the APE, however this area has been subjected to historical and modern disturbances such that surviving trail remnants are not visible. Therefore, construction of the transmission interconnect line would have no direct impact to the integrity of this resource.

Cultural resources located in the APE from previous inventories that are currently unevaluated, are considered potentially eligible for nomination to the NRHP pending further evaluation. These include lithic scatters at sites, 10MA3, and 10CA298 (not relocated during the most recent inventory), the historic railroad grade, 10CA864, and the Twin Falls Northside Canal, 000789. These resources would require additional testing and evaluation prior to determination of impact or Proposed Project effect if they were not avoided during Proposed Project construction.

The remaining sites and isolates determined to be ineligible for nomination to the NRHP would be subject to impacts ranging from no impact to high impact. Regardless of Proposed Project impacts, per 36 CFR 800, no further management would be required for these sites however, pursuant to FLPMA scientific values, such as mapping and final collection, will be completed.

Under Alternative B, the turbines would be visible from the intact section of the Oregon Trail located north of the Proposed Project area. Although the turbines would be visible from this section of the trail, other factors mitigate the potential negative visual effects including: intervening farm buildings and fencing; transmission lines; I-84 and I-86, SH-81 (adjacent to trail), and the distance from the turbines and other project features; and angle of view. Considering these factors, the Proposed Project would have a low to moderate visual impact on this segment of the trail.

The other intact segment of the Oregon Trail starts approximately four miles northeast of the northernmost turbine under Alternative B. A photographic simulation (Appendix G) was used to illustrate the visibility of the turbines at a key viewing location approximately four miles from the north end of the

Proposed Project. The view of Cotterel Mountain is unobscured at this point on the trail and because of the topography, the intervening structures, utility lines and roads are not visually prominent. However, the four mile distance from the trail to the turbines diminishes the overall visual effects of the wind turbines on the landscape. Only approximately 30 degrees of the potential 360 degree views from the trail would be impacted by the wind turbines. Therefore, the accumulative negative visual effect of the Proposed Project under Alternative B, on this segment of the Oregon Trail would be low to moderate.

Turbines would also be visible from the intact section of the California Trail located east of the southern extent of the Proposed Project, along the east ridge of Cotterel Mountain. From this intact portion of the California Trail, the views of Cotterel Mountain are unobscured. However, the distance from the trail to the turbines would diminish the overall visual effects of the Proposed Project on the landscape. Approximately 40 degrees of the potential 360 degree views from the trail would be potentially affected. Although the turbines would be visible from this section of the trail, other factors were evaluated in considering the potential negative visual effects including farm buildings and fencing, transmission lines, SH-81, and the angle of view. Therefore, under Alternative B the potential negative visual effects on this intact segment of the California Trail would be moderate.

The transmission interconnect lines would add a visual feature to the landscape that is already a common sight from the intact sections of the Oregon and California Trails. While the transmission interconnect lines would be visible they would not be expected to detract from the overall character of the landscape.

4.7.3 Alternative C

Impacts for Alternative C are similar to impacts for Alternative B with the exception that the Proposed Project would have no impact to site CM-S-17 in Alternative C because this site would be avoided.

Impacts from Alternative C on historic trails would be similar to those described under Alternative B. Under Alternative C, the turbines would be spaced further apart resulting in a lower density of turbines along the ridgeline. However, the turbines under Alternative C would be taller and have larger blade diameters. This would result in the turbines being visible from a greater distance.

The transmission interconnect line under Alternative C would predominantly parallel an existing transmission line of similar size structure. From a distance it would not be highly visible and would not add a new feature to the landscape. Therefore, it would not be expected that the transmission interconnect line under Alternative C would affect the view from the intact sections of the historic trail.

4.7.4 Alternative D

Impacts for Alternative D are similar to impacts for Alternative C with the exception that the Proposed Project would have no impact to sites CM-S-21, CM-S-22, CM-S-18, and CM-S-1 in

Alternative D because these sites would be avoided. Alternative D would have the fewest impacts to historical and cultural resources.

Visual impacts to the historic California Trail would be eliminated under Alternative D. No turbines would be sited along the east ridge of Cotterel Mountain and therefore would not be visible from the intact sections of the California Trail located east of the Proposed Project area.

Potential impacts to the Oregon Trail would be the same as those described under Alternative C.

Potential impacts from the transmission interconnect line would be the same as those described under Alternative C.

4.8 AMERICAN INDIAN CONCERNS

Impacts to American Indian concerns are being identified during government-to-government consultation. These consultations are important to both the Tribes and the BLM.

4.8.1 Alternative A (No Action)

Implementation of the No Action Alternative would maintain the current level of impacts.

4.8.2 Alternative B

As of the publication of the Final EIS, ridges and mountaintops have been identified by the Tribes to be of special interest. In addition, sage-grouse, a spiritually significant species to the Tribes, could be displaced from Cotterel Mountain. Impacts including displacement or decline of sage-grouse, could affect the ability of the Tribes to exercise traditional use rights as well as the passing along of Tribal traditions and practices directly associated with the species.

4.8.3 Alternative C

Impacts under Alternative C would be the same as those described under Alternative B.

4.8.4 Alternative D

Under Alternative D there would be less direct effects to species, habitat, aesthetics, and cultural resources.

4.9 SOCIOECONOMICS

4.9.1 Alternative A (No Action)

Alternative A would result in no impacts or changes to regional or local socioeconomic conditions because the Proposed Project would not be constructed. The Proposed Project area would continue to function as a dispersed recreation area and would continue to provide seasonal grazing opportunities for livestock. The Mini-Cassia area would not experience the tax revenue benefits that would be associated with the Proposed Project.

4.9.2 Alternative B

Community and Regional Economy

Construction

Construction of the Proposed Project would last approximately eight months. The cost of construction would be approximately \$200 million, the majority of which would be the cost of the towers and turbines. Table 4.9-1 presents an approximate breakdown of the Proposed Project construction cost.

Table 4.9-1. Construction Costs (\$1000s) of the Proposed Project.

Type of cost	Cost
Labor (107 to 132 construction workers)	\$3,000
Non-labor costs	\$197,000
130 foundations at \$60,000 each, and concrete batch plant	\$8,000
Wind turbines and towers	\$160,000
Other materials and non-labor costs	\$10,000
Roads, O&M building, site preparation	\$3,000
Electrical and communications	\$16,000
Total construction cost	\$200,000

The aggregate for the concrete batch plant would be purchased within the Mini-Cassia area, along with other standard and available materials and supplies that would be needed for construction.¹ Approximately five workers would constitute the road crew for the road building. The larger crew for the eight-month general construction period would average between 107 and 132 workers. Since the construction process would be an “assembly line” type of operation, the beginning and end of the construction period would involve a slightly lower number of workers when compared to the middle months. The breakdown of the construction workforce by type is shown in Table 4.9-2.

Laborer positions and other construction worker positions that do not require specialized skills would likely be filled from the local Mini-Cassia area labor force.² The maximum 132-person workforce would represent one-fifth of construction employment in the Mini-Cassia area. Non-local workers could originate from other counties in south central Idaho, or also from further distances. The few construction workers who are predicted to commute on a weekly basis would stay in local lodging and would likely have less than an hour drive each way to the job site.

¹ The IMPLAN model assumes 20 percent of non-labor costs of construction (excluding cost of wind turbines and towers) would be spent within Cassia County or Minidoka County.

² The IMPLAN model assumes 60 percent of the construction workforce would originate from Cassia County or Minidoka County.

Table 4.9-2. Construction Workforce for the Proposed Project.

Type of Worker	Average Number Required Throughout the Construction Period
Carpenter/form setter	7
Cement finisher	3
Cement, rebar	4
Electrician helper	17
Electrician, industrial	11
Electrician, master	2
Laborer	43
Structural steel worker	9
Backhoe operator	5
Cherry picker operator	7
Cable crane operator	5
Dozer operator	2
Power shovel operator	3
Road roller operator	2
Estimated daily total	107 to 132

Assuming ten percent of the construction workforce would commute on a weekly basis, a maximum of 14 workers would need lodging during the week. Local lodging facilities would have sufficient availability to accommodate these workers during the week.

Construction activity would result in secondary economic impacts (both indirect and induced) within the Mini-Cassia area. Secondary employment effects would include (1) indirect employment resulting from the purchase of goods and services by firms involved with construction, and (2) induced employment resulting from construction workers spending their income in the local area. Similarly, indirect and induced income and spending effects would also occur as “ripple” effects from construction. Indirect and induced impacts were estimated using IMPLAN economic modeling software, an input/output model specific for the economic study area of Cassia County and Minidoka County (IMPLAN 2003). Estimated indirect and induced effects of construction that would occur within Mini-Cassia may add 50 jobs, approximately \$1 million in labor income, and approximately \$3.3 million in total output. Similar to direct economic impacts from construction, these secondary economic impacts would occur one time. The secondary impacts would likely lag behind direct impacts by six to 12 months.

In summary, approximately 40 percent of construction workers (53 workers) could originate from outside the Mini-Cassia area, and approximately ten percent (14 workers) would commute weekly. This would result in a temporary additional daily population in the area surrounding the Proposed Project from Monday through Friday, during the construction period. The change would be noticeable because the population near the Proposed Project area is small (e.g., 48 residents in the five census blocks near where the Proposed Project is located, 177 residents in Malta, and 262 residents in Albion). However, the population increase would be temporary and would only occur during the

week (the majority of the increase would occur during daytime hours only, not overnight). The impact of additional population would be low because population near the Proposed Project area would not grow substantially or permanently. The increase in demand for services would be small and temporary, and no businesses or residences would be displaced by the Proposed Project construction. Communities and businesses would retain their physical arrangement and function. Workers would not likely relocate to cities or unincorporated areas near the Proposed Project area because the construction period would be relatively short.

Beneficial impacts to local businesses and the economy would include: additional spending by workers for food, gas, and lodging; spending by the construction contractor for supplies and standard materials needed for construction; and additional jobs and related income. These impacts are expected to be low to moderate.

Changes in tourism use and spending would likely represent no impact to a low impact due to construction because (1) the construction period would be relatively short, and (2) construction activities would be occurring in an area that is not widely used. Additionally, the “assembly line” construction sequencing allows construction to be completed in one area before construction is begun in the next. Therefore, construction would only occupy one section of the Proposed Project area at one time, freeing other areas for recreational activities.

Construction of the Proposed Project, and in particular, the road system, would require materials to be transported by truck. Approximately 14,940 truck trips would be required under Alternative B. Of these total truck trips, 12,735 truck trips would be for the purpose of road building. These truck trips would result in impacts on local communities similar to impacts from truck trips transporting agricultural goods during harvest season. Types of impacts would include noise, dust, and additional traffic on roads.

Fiscal Impacts

Sales and/or use tax revenue on the construction contract would accrue to Cassia County because Cassia County is the location of the Proposed Project construction. The contractor would need to apply for a use tax account with the Idaho State Tax Commission (ITC 2004). Sales tax revenue on the construction contract would be approximately \$12 million. This one-time beneficial fiscal impact would more than double retail sales tax revenue accruing to Cassia County that year.

Minidoka County would benefit from sales tax revenue to the extent that construction or operation employees purchase goods or services in Minidoka County.

Operation

Community and Regional Economy

The Proposed Project construction would be expected to begin within one year of the issuance of the Record of Decision, and would involve operation of the wind turbines 24 hours per day, seven days

per week. Operating the Proposed Project would cost approximately \$4.5 million annually (Table 4.9-3).

Table 4.9-3. Annual Cost of Operation and Maintenance (\$1000s) of the Proposed Project.

Type of cost	Cost
Labor	\$600
Non-labor costs	\$3,900
Portion of non-labor costs occurring locally (does not include lubricants)	\$1,000
Total annual operation cost	\$4,500

Notes: The labor cost of \$600,000 would include salaries, benefits, and other labor-related costs.

Twelve employees would work at the Proposed Project on a permanent basis, including one office administrator, one foreman, and ten windsmiths/electricians. Employees would work eight-hour shifts, five days per week, with the exception of five of the windsmiths, who would likely rotate shifts to cover nights and weekends. It is anticipated that all permanent positions with the exception of the foreman position would be filled from the local labor force (within the Mini-Cassia area). Some windsmith training would be provided to those who have a basic understanding of electrical work.

In addition to labor costs, the cost of operation also includes maintenance and other non-labor costs associated with operating the turbines and transmitting power. Maintenance costs could increase slightly in the future, after the five-year warranty on the turbine expires. The Applicant would employ on-call staff to address potential turbine breakdowns.

Similar to construction, operation of the Proposed Project would result in secondary (indirect and induced) economic impacts that would occur within the Mini-Cassia area.³ Indirect and induced impacts were estimated using IMPLAN (IMPLAN 2003). Unlike indirect and induced impacts from construction, indirect and induced impacts from operation would represent permanent increases in area economic variables. These impacts would lag behind direct economic impacts by approximately six to 12 months. Estimated indirect and induced impacts of Proposed Project operation that would occur within the Mini-Cassia area on an annual basis would be an additional seven permanent jobs, \$145,000 in labor income, and approximately \$472,000 in output.⁴

In summary, it is expected that one operation employee, at most, would originate from outside the area. This would not represent an increase in population, concentration of population, or increase in demand for public services. Operation of the Proposed Project would not disrupt or displace businesses or residences, and would not divide a community.

³ The IMPLAN model assumes that 25 percent of non-labor operation and maintenance costs would be spent within Cassia County or Minidoka County.

⁴ The IMPLAN model assumes that seven of the 12 operation employees would originate from the Mini-Cassia area.

Low but beneficial economic impacts to the local community and economy would include 12 new permanent jobs and related income, and additional spending at local establishments by workers (gas and food) and by the Applicant (supplies and standard materials for operational and maintenance functions).

Use of the area by tourists and spending by tourists would not likely decrease substantially in the long run. Visual impacts to recreationists traveling in the area would likely occur. However, since Cotterel Mountain is not a destination recreation location, construction of the Proposed Project should not alter the decision of tourists to travel through the area. Therefore, tourism would not likely be affected by views of the Proposed Project. Users that chose to recreate on Cotterel Mountain in proximity to the Proposed Project would experience change in views compared to current conditions.

Fiscal Impacts

Property Tax

After construction, the Proposed Project property would remain public land. ITC would set the estimated value of improvements because the property would be newly classified as "operating property." According to the ITC, the estimated value of improvements would be \$194 million of the \$197 million non-labor cost of the Proposed Project, because \$3 million would be the cost of roads and transmission interconnect lines. The transmission interconnect lines would be turned over to Bonneville Power Administration (BPA) or to Raft River Rural Electric. Accordingly, the ITC estimates that the Proposed Project would add approximately \$197 million in value of improvements in Cassia County (ITC 2003b).

Sales Tax

Sales tax revenue accruing to Cassia County would increase due to increased retail sales (supplies purchased) attributable to Proposed Project construction. Assuming approximately \$7.5 million (20% of non-labor construction costs excluding the cost of the wind turbines and towers) is spent locally, the one-time increase in sales tax revenue would be approximately \$500,000.

Similarly, assuming an annual \$1 million is spent each year in the Mini-Cassia area for Proposed Project operation, the permanent increase to annual sales tax revenue would be \$60,000. This estimate would increase to the extent construction and operation employees spend money locally on gas, food, and lodging throughout the area. According to the ITC, the amount of sales tax revenue that is returned to each county depends on population and assessed value (Poplar 2003). Therefore, because the Proposed Project would result in an increase in property value in Cassia County, the portion of sales tax revenue returned to the county should also rise. This would represent a moderate impact.

Cassia Joint School District No. 151

According to the distribution of property taxes, Cassia Joint School District No. 151 would receive an additional \$1.3 million per year due to the Proposed Project.⁵ As a result of this increase in tax revenue, the state would act in two ways: it would remove financial support that is currently provided to the School District, and it would replace those funds through the state property tax replacement system. The net effect of these actions would be an increase in revenues of only \$123; therefore, the School District would experience a property tax benefit associated with the Proposed Project. These increases would benefit school districts in the State of Idaho, including Cassia County School District (Times News 2004).

Road Maintenance

The scoping process for this EIS indicated that local citizens are concerned about increased demand for road maintenance by local agencies. The increased demand would result from increased use of existing roads throughout the Proposed Project area, and construction of new roads, for the purpose of Proposed Project construction and operation. Local taxes such as property taxes, sales taxes, and use taxes are meant to cover these additional costs associated with any type of development.

Property Values***Construction***

The proposed construction period would be approximately eight months. Because construction (workers, heavy equipment, staging areas, etc.) on the Proposed Project would be temporary and because the Proposed Project is located over two miles from the nearest residence, adverse property value impacts (decreases in property value due to views of the construction) attributable to Proposed Project construction are not expected to occur.

Operation

ECONorthwest prepared a study that analyzed the economic effects of a wind power project on private land in Kittitas County, Washington (ECONorthwest 2002). The study included an assessment of property value impacts due to wind power projects. ECONorthwest (1) conducted a phone survey of tax assessors for counties that recently had wind turbines installed in their areas; (2) reviewed current literature to find statistical studies that quantified the impacts of wind turbines on property values, and (3) reviewed literature on the impacts that transmission interconnect lines have on property values. Assessors were chosen for interviews if the projects within their counties were ten years old or less, were viewed from residential properties, and had multiple turbines. ECONorthwest found that “views of wind turbines would not impact property values.” ECONorthwest did not find evidence supporting the claim that views of wind farms decrease property values (ECONorthwest 2002). Applying the ECONorthwest research, even if a visual impact were to occur as a result of this Proposed Project, resulting decreases in property values would not necessarily occur.

⁵ The estimate of \$1.3 million in additional property tax revenue accruing to Cassia Joint School District No. 151 is supported by a study completed in March 2003 by the ITC, “Proposed Cotterel Mountain Wind Farm Project – Likely Effect on Cassia County Property Taxes” (ITC 2003).

Social Values

The Proposed Project would not interfere substantially with social values in the area. Grazing, hunting, and other activities that currently take place at Cotterel Mountain would continue to occur. Due to the increased public access provided by the new and improved roads that would be built as part of the Proposed Project, activities such as hunting could increase. Income that currently accrues to the Mini-Cassia area due to tourism is not likely to decrease because the activities would remain available, and the quality of the recreational experience would remain similar.

There are those, particularly in and surrounding the communities of Albion and Malta, who are strongly opposed to the Proposed Project. This opinion was reflected in a number of the comments received during the 90 day public comment period on the DEIS and in a petition that was delivered to the Burley Field Office Manager which indicated a high percentage of Albion residents in opposition to the Proposed Project. Conversely, a professionally conducted opinion poll of registered voters in Cassia County was commissioned by the Applicant in September of 2004 which showed that a high percentage of respondents were in favor of the Proposed Project. In addition, many people who submitted comments during both the public scoping period and 90 day comment period on the DEIS wrote in support of the Proposed Project. There are also those, including some living near the Proposed Project area, who voiced concerns about property issues (value changes and maintaining boundaries when public access increases), recreation issues (increases in use due to greater public access and possible decrease in desirability due to perception of views), and fiscal impacts (tax impacts and increased need for road maintenance). These diverging points of view, at both the community and county levels have contributed to a minor negative change in community cohesiveness and may continue to do so if the Proposed Project is approved.

Environmental Justice

The Mini-Cassia area has more minority and low-income residents when compared to the south central region of Idaho and the State of Idaho. The five census blocks within which the Proposed Project would be constructed are, as a whole, eight percent minority, which is a lower percentage than the same measure for the Mini-Cassia area, South Central Idaho, and the State of Idaho. Similarly, the block group within which the Proposed Project would be constructed is ten percent minority, which is a lower percentage than the same measure for the Mini-Cassia area, South Central Idaho, and the State of Idaho. The residents closest to the Proposed Project, who would experience much of the temporary impacts of construction, are not classified as a minority or low-income population. Therefore, minority and low-income populations would not experience disproportionate impacts as a result of the Proposed Project.

4.9.3 Alternative C

Under Alternative C, construction and annual operation cost would be nearly identical to Alternative B; therefore, the impacts would be similar. Under Alternative C, slightly fewer truck trips would be required than under Alternative B, however, potential impacts due to truck trips would likely be the same.

4.9.4 Alternative D

Alternative D would have 40 to 50 percent fewer turbines than Alternative B. Socioeconomic benefits such as tax revenue increases due to the Proposed Project would therefore be less in magnitude, and adverse impacts such as disturbances due to construction of the Proposed Project would likely be shorter in duration and less in magnitude. The type of impacts would be similar to Alternative B.

Construction

Community and Regional Economy

The cost of construction would be approximately \$125 million, based on the smaller number of turbines. The breakdown of costs would be proportionally the same as shown in Table 4.9-1. The type and amount of employment and the origin of workers would be similar to Alternative B. Secondary impacts would be similar in type to Alternative B, but smaller in magnitude. Impacts would be low to local businesses and the economy such as additional spending by workers for food, gas, and lodging; spending by the construction contractor for supplies and standard materials needed for construction; and additional jobs and related income. Impacts to tourism and related spending would be similar to Alternative B. Under Alternative D, fewer truck trips would be required, approximately one-third less than under Alternative B. Similar to other types of impacts under Alternative D, impacts from truck trips would be the same in type, but less in magnitude and duration when compared to Alternative B.

Fiscal Impacts

Sales or use tax revenue impacts would be similar to Alternative B, except smaller because the construction contract amount would be smaller.

Operation

Community and Regional Economy

Operating the Proposed Project under Alternative D would cost approximately \$2.9 million annually, based on the smaller number of turbines. The number of employees and related income associated with operation would be less than under Alternative B. The breakdown of operation costs would be proportionately the same as shown in Alternative B. Secondary impacts would be the same in type as Alternative B, but smaller in magnitude due to the smaller number of turbines.

Fiscal Impacts

The effect on property tax revenue under Alternative C would be less than Alternative B because the estimated value of the improvements to the land would be less. The additional revenue from the construction of the Proposed Project would likely be distributed in the same manner as Alternative B (Table 3.5-11).

Accrued sales tax revenue for Cassia County would also be less in comparison to Alternative B; therefore, fewer funds would be available for the School District under Alternative C, because the value of the improvements to the land would be less.

Issues related to road maintenance would be the same as under Alternative B.

Property Values

The type of impacts due to construction would be the same as under Alternative B. Similar to under Alternative B, impacts (decreases) to property values due to changed views would not likely occur due to operation.

Social Values

Issues related to social values would be the same as under Alternative B.

Environmental Justice

Similar to Alternative B, minority and low-income populations would not experience disproportionate Proposed Project impacts.

4.10 LANDS AND REALTY

This section discusses the potential effects to land ownership, land uses, and land management plans in the Proposed Project area.

4.10.1 Land Status and Ownership

Surface or mineral ownership would not change by implementing any of the alternatives. No direct or indirect effects to existing surface land ownership or mineral ownership would occur by implementing any of the alternatives.

The proposed wind turbines, roads, and ancillary facilities would be located on federal lands under the jurisdiction of the BLM. ROW approvals would be obtained from the BLM in accordance with the processes outlined in 43 Code of Regulations 2800 and the BLM ROW Handbook (H-2800-1).

4.10.2 Land Use

The primary impacts to land use associated with the Proposed Project are tied to change in landscape character, aesthetic quality and prior land use. Current predominant land use in the Proposed Project area consists of wildlife habitat, livestock grazing and recreation.

4.10.3 Alternative A (No Action)

Alternative A would result in no change to landscape character, aesthetic quality or existing land uses within the Proposed Project area or its vicinity.

4.10.4 Alternative B

Moderate impacts would occur from an overall change in landscape character from a remote to an industrial character and a decline in the aesthetic quality of the land for recreational uses. No permanent changes to land use are expected within the Proposed Project area. All surface equipment

would be removed from the area at the end of the economic life of the Proposed Project, and reclamation would restore disturbed sites to near prior conditions. All actions would be in conformance with county, state, and federal land use plans.

Livestock grazing, recreation and wildlife use would continue within the Proposed Project area during construction and operation. Impacts to these resources are discussed in the individual resource sections. Prior land uses would be re-established after decommissioning of the Proposed Project, and final reclamation of turbine pads and roads.

4.10.5 Alternative C

For Alternative C, impacts to land use would be the similar to Alternative B. Under Alternative C, fewer miles of access road would be constructed, providing less access to the area than Alternative B.

4.10.6 Alternative D

Alternative D would have the fewest impacts to land use due to a smaller area of construction (fewer turbines) and fewer miles of access road.

4.11 RECREATION

Primary impacts to recreation are based on how the Proposed Project could change the Recreation Opportunity Spectrum (ROS) classification within the Proposed Project area and takes into account: existing recreation opportunities for activities such as camping, hunting, OHV use and sightseeing; visitor use; and potential for improvement of recreation facilities. Changes in visitor type or experience and degree of lost opportunities were used as indicators in the evaluation process.

4.11.1 Alternative A (No Action)

Based on the activities outlined in the Cassia RMP, no change to recreation opportunities or degree of use would be anticipated in the area, beyond some minor modifications to recreation facilities and trails. These modifications are expected to enhance the recreation spectrum in the Proposed Project area.

4.11.2 Alternative B

Under Alternative B, impacts to recreation resources are expected to be moderate. Public access to federal and state lands within the Proposed Project area would not be restricted, except during construction of the Proposed Project for safety purposes. Following Proposed Project construction, public access to federal and state lands would be improved with about 25 miles of new or reconstructed roads. During construction of the Proposed Project, noise, dust, traffic, equipment use, and associated human activities would change the character of the area and result in a temporary loss of recreational opportunities.

The Proposed Project would alter the aesthetic sense of Cotterel Mountain as a rural, relatively undeveloped recreational area. The improved road system would likely result in an increased number

of visitors to the area, and the daily presence of O&M personnel may discourage visitors seeking solitude. Increased access would enhance opportunities for legal hunting and wildlife sightseeing for some recreational users. However, this could lead to occurrences of poaching and other disturbances to big game and other wildlife.

The Proposed Project may attract tourists to the area. The types of visitors could shift from predominately local visitors to visitors from outside the area that would be interested or curious about the wind turbines and energy generation. The novelty of the wind turbines and change from the relatively undeveloped prairie and sagebrush landscape along I-84 would likely cause some travelers to view the Proposed Project with interest. Drivers passing by may be intrigued by the wind towers and stop to investigate or photograph them. As a result, it may be prudent to install interpretive kiosks at the rest area along I-84 east of the Proposed Project area or along the back-county byway (SH-77) south of the Town of Albion or at other appropriate locations to inform drivers of the Proposed Project.

Under Alternative B, a wind turbine would be located within about 760 feet of the Coe Creek picnic site. Visitors to the picnic site may be able to hear the wind turbines at times of turbine operation. In addition, several turbines would be visible from the picnic site. The auditory and visual presence of the wind turbines may deter some visitors from using the picnic site. Other visitors may be attracted to the picnic site by its unique location within an operational wind power generation facility.

All surface equipment and structures would be removed during final reclamation. All turbine locations, selected roads, and other disturbed sites would be reclaimed to reestablish grazing lands, wildlife habitat, and recreational use. Some roads may be retained upon Proposed Project completion allowing increased recreational use of the area.

Alternative B with its associated road improvements and infrastructure (turbines, substations, transmission lines, and O&M building) would alter the current ROS category for Cotterel Mountain. The wind turbines would affect the naturalness of the area. The improved all weather gravel roads would be inconsistent with a semi-primitive motorized ROS designation. Areas designated as semi-primitive motorized have no or few roads (two-track jeep trails are okay), receive light motorized use, and maintain a predominantly unaltered landscape. Therefore, construction and operation of the Proposed Project under Alternative B would change the ROS of Cotterel Mountain within the Proposed Project area, from semi-primitive motorized to roaded natural.

Under Alternative B, two new transmission interconnect lines would be constructed. These transmission lines would be located in areas where there currently are no existing transmission lines. The siting of these transmission lines could alter recreation user views within these areas. However, the modification to the landscape would not be expected to occur to such a level as to result in a change to the ROS for these areas.

4.11.3 Alternative C

Under Alternative C, the Proposed Project would require the reconstruction of about three miles of road and the construction of about 19.5 miles of new roads (about 23 miles total). Public use of Proposed Project roads would be restricted through a series of gates and natural rock barriers but would not result in a loss of access to traditional use areas. Primitive access would be maintained wherever possible by linking the existing primitive road system through construction of new primitive roads. Similar to Alternative B, impacts to recreation resources are expected to be moderate.

Under Alternative C, the closest wind turbine would be located within about one-quarter mile (1,400 feet) of the Coe Creek picnic site. Visitors would likely be able to hear the turbines during times of turbine operation but less so than under Alternative B. Turbines would still be visible from the Coe Creek picnic site.

The potential impacts to recreation under Alternative C could result in a change of visitor/use or experience. Under Alternative C, a portion of the existing primitive road would be maintained allowing for a continued semi-primitive motorized user experience. However, the wind turbines and improved all season project roads would be visible from the maintained portion of the primitive road resulting in a change to the viewers landscape. Therefore, construction and operation of the Proposed Project under Alternative C would also change the ROS of Cotterel Mountain within the Proposed Project area, from semi-primitive motorized to roaded natural.

Under Alternative C, the proposed transmission interconnect lines, although longer in length, would parallel existing transmission lines. The addition of a new transmission line next to the existing transmission would not result in a significant modification to the users view of the landscape. As a result no impacts to recreation would be expected to occur from either construction or operation of the proposed transmission interconnect lines under Alternative C.

4.11.4 Alternative D

Under Alternative D, the Proposed Project would require the reconstruction of about three miles of road and the construction of about 15 miles of new roads (about 18 miles total). Public use of Proposed Project roads would be restricted through a series of gates and natural rock barriers but would not result in a loss of access to traditional use areas. Primitive access would be maintained wherever possible by linking the existing primitive road system through construction of new primitive roads. Similar to Alternative B and Alternative C, impacts to recreation resources are expected to be moderate.

Impacts to users of the Coe Creek picnic site would be the same as those described under Alternative C.

The potential impacts to recreation under Alternative D could result in a change of visitor/use or experience. Under Alternative D, a portion of the existing primitive road would be maintained allowing for a continued semi-primitive motorized user experience. However, as described under Alternative C, the wind turbines and improved all season project roads would be visible from the

maintained portion of the primitive road resulting in a change to the viewers landscape. However, Under Alternative D, no project features would be located along the east ridge of Cotterel Mountain. The majority of the views to recreation users along the east Cotterel Mountain ridgeline would be unaltered and the ROS for this area would be unchanged.

Under Alternative D, no impacts to recreation would be expected to occur from either construction or operation of the proposed transmission interconnect lines.

4.12 LIVESTOCK GRAZING

Primary impacts to livestock grazing are based on how the Proposed Project could affect forage availability for livestock grazing, grazing management, and Animal Unit Months (AUMs). The information on current grazing permits in the Proposed Project area (Table 3.8-1) was used for calculating impacts. The following indicators were used in assessing potential impacts to grazing:

- Acres of forage disposed from grazing for livestock and wildlife; and
- Changes in range conditions and alteration of current range improvements.

4.12.1 Alternative A (No Action)

Based on the activities outlined in the Cassia RMP no changes to grazing would be expected in the area beyond some vegetation treatments or minor range improvement projects to facilitate livestock grazing. Under Alternative A, these modifications are not expected to impact livestock grazing.

4.12.2 Alternative B

A temporary loss of rangelands, associated with construction activities, would reduce forage availability on approximately 365 acres (3%) from the North and South Cotterel Allotments. This estimate is based on 100 percent of the affected area being available as forage, even though a percentage of these areas is of no forage value, i.e. rock outcrops, roads, bare ground, etc. It is assumed that impacts on range resources from construction activity would be evenly distributed throughout both grazing allotments. Following construction of the Proposed Project, reclamation and revegetation efforts would restore range improvement projects and forage availability on approximately 162 acres (45% of the impacted area). Restoration of disturbed vegetation to pre-construction conditions is expected to take approximately three to five years. Permanent impacts to rangeland vegetation would result in a loss of forage on approximately 203 acres (2%) of the Proposed Project area.

The overall response of livestock to a fully operational wind power project is difficult to assess. It is likely that most of the livestock would habituate to the presence of the operating wind power project as well as to the increased traffic associated with maintenance of the Proposed Project. Some livestock may not habituate to the presence of the Proposed Project and its associated activities. These animals would likely stay some distance from the turbine strings and access roads; it is unknown if this displacement would adversely effect the range resource or the behavior and fitness of livestock.

Post construction monitoring at existing operational wind power projects has shown that livestock habituate to the operational wind turbines and continue to forage within the project areas.

Clearing existing vegetation from construction sites may provide a corridor for the spread of invasive and noxious weeds, which could reduce available forage, and in some instances, be harmful to the health of livestock. Based on the amount and distribution of area impacted by Alternative B, impacts to grazing operations would not be appreciable during construction and throughout the period of operation of the Proposed Project.

During construction of the Proposed Project under Alternative B, it could be necessary to close specific portions of Cotterel Mountain to livestock grazing. If these closures would be necessary, the permittees would be compensated by the Applicant for any costs associated with moving, feeding, or caring for displaced livestock during the construction period for the Proposed Project. Therefore, there would not be any impacts to livestock during construction of the Proposed Project under Alternative B, however, inconveniences to operators may be unavoidable.

4.12.3 Alternative C

Impacts to livestock grazing from Alternative C would be similar to Alternative B, but the total number of acres initially affected would be slightly less. The amount of available forage for livestock use would be greater under Alternative B. Alternative C would initially impact approximately 337 to 350 acres (3%) of rangeland currently available for grazing within the Proposed Project area. Following construction of the Proposed Project, reclamation and revegetation efforts would restore range improvement projects and forage availability on approximately 147 acres (42% of the impacted area). Restoration of disturbed vegetation to pre-construction conditions is expected to take approximately three to five years. Permanent impacts to rangeland vegetation would result in a loss of forage on approximately 203 acres (2%) of the Proposed Project area.

4.12.4 Alternative D

Impacts to livestock grazing from Alternative D would be similar to Alternative B and Alternative C, but the total number of initial and permanent acres affected would be less. The amount of available forage for livestock use would be greatest under Alternative D. Alternative D would have the least amount of impact to livestock grazing compared to Alternative B and Alternative C. Alternative D, would initially impact approximately 280 acres (3%) of rangeland currently available for grazing within the Proposed Project area. Following construction of the Proposed Project, reclamation and revegetation efforts would restore range improvement projects and forage availability on approximately 122 acres (44% of the impacted area). Restoration of disturbed vegetation to pre-construction conditions is expected to take approximately three to five years. Permanent impacts to rangeland vegetation would result in a loss of forage on approximately 158 acres (1%) of the Proposed Project area.

4.13 VISUAL RESOURCES

Visual Resource Contrast Rating involves determining whether the potential visual impacts from proposed surface-disturbing activities or developments would meet the management objectives established for the Cotterel Mountain area or whether design adjustments would be required for the Proposed Project. The Visual Resource Contrast Rating method is summarized below, followed by the Visual Resource Contrast Rating for the Proposed Project.

4.13.1 Visual Resource Contrast Rating Method

The Visual Resource Contrast Rating method is a systematic process used by the BLM to analyze potential visual impacts of a proposed action. The degree to which a proposed action affects the visual quality of a landscape depends on the visual contrast created between a proposed action and the existing landscape. The contrast can be measured by comparing the proposed action features with the existing major landscape features. The basic design elements of form, line, color, and texture are used to make this comparison, and to describe the visual contrast created by the proposed action. This process provides a means for determining visual impacts and for identifying measures to mitigate these impacts.

To assess the visual impact from the Proposed Project, contrast ratings were completed from the most critical viewpoints, called key observation points (KOP). Initially, the BLM selected 12 KOP along commonly traveled routes, or at other likely observation points, such as the Pomerelle Mountain Resort. Specialists from the BLM evaluated these 12 points and chose five KOP as representing the best scenic value for the Proposed Project (Figure 4.13-1). The visual observation team visited, photographed, and rated the viewshed of the Proposed Project area from each of the four KOP. Photographs of the Proposed Project area were incorporated into a computer-generated visual simulation of the completed Proposed Project. From each KOP, the computer-generated simulation portrayed the proposed turbines in their proper locations and at the correct scale (Appendix G). Using these simulations, the specialists each completed the BLM visual contrast rating worksheets. Appendix G includes the visual simulations used for the visual contrast rating

The team assessed the visual contrasts between the viewshed of the Proposed Project area under all proposed alternatives and the existing viewshed. The team identified the basic features (landform, vegetation, and structures) and the basic elements (form, line, color, and texture) that cause contrast. The Proposed Project would primarily consist of landform features (e.g., roads and pads) and structural features (e.g., turbines, transmission interconnect lines). Each member of the team then rated the degree of contrast (none, weak, moderate, or strong) for each basic element within each basic feature using the visual resource contrast rating criteria (Table 4.13-1).

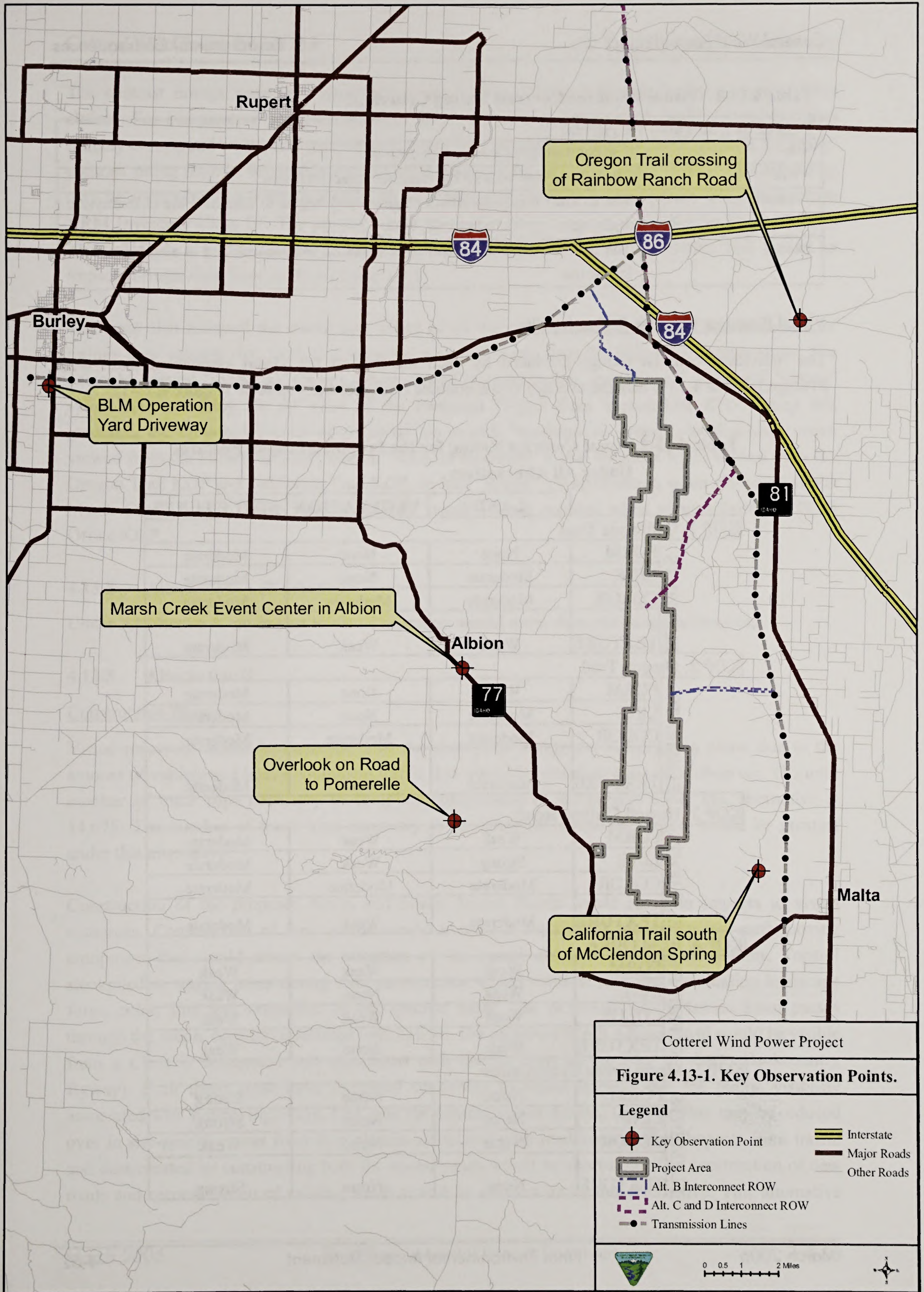


Table 4.13-1. Visual Resource Contrast Rating Criteria.

Degree of Contrast	Criteria
None	The contrast is not visible or perceived.
Weak	The contrast can be seen but does not attract attention.
Moderate	The contrast begins to attract attention and begins to dominate the characteristic landscape.
Strong	The contrast demands attention, will not be overlooked, and is dominant in the landscape.

Visual Resource Contrast Rating Results

The individual contrast ratings produced by each member of the visual assessment team were averaged. Table 4.13-2 lists the average visual contrast rating for the five KOP (Figure 4.13-1).

Table 4.13-2. Visual Contrast Rating for the Proposed Project Features Under All Alternatives .

		LAND	VEGETATION	STRUCTURES
KOP 1: California Trial				
ELEMENTS	FORM	None	None	Moderate
	LINE	Moderate	None	Moderate
	COLOR	Moderate	Moderate	Moderate
	TEXTURE	Weak	Weak	Moderate
KOP 2: Oregon Trial				
ELEMENTS	FORM	Weak	None	Moderate
	LINE	Moderate	None	Moderate
	COLOR	Moderate	Moderate	Moderate
	TEXTURE	Moderate	Weak	Moderate
KOP 3: Howell Canyon Road				
ELEMENTS	FORM	Weak	Weak	Moderate
	LINE	Strong	Weak	Moderate
	COLOR	Moderate	Moderate	Moderate
	TEXTURE	Moderate	Weak	Moderate
KOP 4: BLM Office				
ELEMENTS	FORM	Weak	Weak	Weak
	LINE	Weak	None	Weak
	COLOR	Weak	Weak	Weak
	TEXTURE	Weak	None	Weak
KOP 5: Marsh Creek Event Center				
ELEMENTS	FORM	None	None	Strong
	LINE	None	None	Strong
	COLOR	None	None	Weak
	TEXTURE	None	None	Strong

The contrast ratings were then compared to the approved Visual Resource Management (VRM) classes. For comparative purposes, the four levels of contrast (none, weak, moderate, and strong) roughly correspond with VRM Inventory Classes I, II, III, and IV, respectively. Therefore, a "strong" contrast rating may be acceptable in a VRM Inventory Class IV area, and a "weak" contrast rating may be acceptable in a VRM Inventory Class II area. All of the proposed turbine strings fall within VRM Inventory Class IV. The project would be visible from Scenic Quality Rating Units (SQRU) 220, which is a VRM Inventory Class II area. Visual sensitivities for the SQRU that would be impacted range from Low to High (Table 3.9.1)

The team also assessed the cumulative effect of all the contrast ratings, because a combination of ratings may suggest that there is a stronger overall contrast than the individual ratings show. For example, several "moderate" ratings, when viewed in combination, may warrant an overall "strong" visual contrast rating for the view of the Proposed Project from a particular KOP. Using this guidance, the Proposed Project would cause: an overall "moderate to strong" visual contrast when viewed from the Pomerelle KOP; overall "weak to moderate" visual contrasts when viewed from the Oregon Trail KOP and California Trail KOP; overall "strong" visual contrasts when viewed from the Marsh Creek Events Center; and an overall "weak" visual contrast when viewed from the BLM Office KOP.

4.13.2 Alternative A (No Action)

Under Alternative A, no impact to visual resources would occur from the Proposed Project.

4.13.3 Alternative B

Construction Phase

Visual resources would be impacted over the short-term during the construction phase due to the amount of vehicle and heavy equipment traffic that would be visible to the casual observer. The total number of truck trips necessary to complete construction of the project under this alternative is 14,675. The number of truck trips necessary to complete the Proposed Project would be greatest under this alternative.

Construction of the proposed North and South Access Roads would result in impacts to visual resources. Construction of these roads would involve a cut-and-fill process, using earth-moving equipment that would attract the attention of the casual observer in various locations. Topsoil stockpiled at staging areas during road construction would contrast with the surrounding landscape form, color, line and vegetation in site-specific areas. The proposed North Access Road passes through the scenic corridor associated with SH-81. The proposed South Access Road would be visible from a Class II designated area associated with SH-77, (part of the City of Rocks Backcountry Byway). Both these areas have increased sensitivity to visual impacts due the public visibility associated with nearby highways, I-84, and the community of Albion, ID. Visibility may be reduced over in site-specific areas from dust plumes associated with road construction. Impacts from traffic and dust created by constructing both the access roads would be short-term. The construction of new roads and reconstruction of existing roads would be greatest under this alternative. This alternative

would require the reconstruction of about 4.5 miles of existing road and the construction of about 22 miles of new road.

Up to five equipment laydown areas would be dispersed throughout the Proposed Project area. These areas would impact visual resources to different degrees depending on their specific locations. The equipment laydown areas would be used to store equipment and facility construction materials, provide equipment parking and refueling sites, crane assembly and disassembly areas, a cement batch plant, waste disposal and collection receptacles, sanitary facilities, and temporary modular office space. The total area impacted would be approximately 15 acres. The direct impacts associated with the presence of equipment and facilities in these areas would be short-term because they would only operate for the construction phase of the project. The footprint left by equipment laydown areas would create a contrast in the surrounding vegetation after the construction phase due to the operation of the laydown areas. Vegetation would be cleared at ground level where the batch plant operates leaving a noticeable contrast after its removal. Grading and revegetation of the laydown areas after the construction phase would reduce visual impacts from laydown area footprints over the long-term.

Cranes used to raise the towers would be visible from inside and outside of the Proposed Project area. The greatest visual impacts would result when a crane is observed from sensitive areas such as the community of Albion, ID and SH-77. Although the cranes would be operating within a Class IV area, they could be visible from the Class II designated area to the southwest. Crane activity would be the greatest under this alternative because the number of towers erected would be greatest.

Construction of the two transmission interconnect lines would be visible from the north and east side of the Proposed Project area. The north transmission interconnect line would pass over SH-81 and its associated scenic corridor. Construction crews and equipment would be visible to the public in this area and may result in visual impacts. The eastern transmission interconnect line would pass through a Class IV designation. Construction crews and equipment would be visible from the scenic corridor associated with SH-81, resulting in a visual impact. There would be 9 miles of transmission interconnect lines constructed. Visual impacts associated with the construction of transmission interconnect lines would be lowest under this Alternative.

The construction of the operations and maintenance building would result in impacts to visual resources when observed by travelers from SH-77. Heavy equipment and materials used to construct this facility would be noticeable to the casual observer in a site-specific area. The impacts associated with construction are projected to occur over an eight-month period. The facility would also be constructed under Alternatives C and D.

Impacts to vegetation, landform, color, and texture would occur within each turbine pad laydown area during and after the construction phase. Each turbine erected would require a laydown area of 185-feet x 180-feet (33,300 square feet). Vegetation in this area would likely be crushed resulting in short-term alterations in vegetation, and texture to observers on the ridgeline. Impacts associated with turbine pad laydown areas would occur on 84 acres under this alternative. This impact would not be visible below the ridgeline.

Within each turbine pad laydown area, a 90-foot diameter area would be cleared of vegetation and graded to facilitate construction of the turbine foundation (Figure 2.3-6). A crane pad area 40-feet x 120-feet within each turbine pad laydown area would be cleared of vegetation and graded flat during construction resulting in visual impacts to vegetation, color, form, and texture. Impacts associated with the crane pad preparation under this alternative would total 14 acres under this alternative. Portions of the crane pad area would be re-graded and reseeded after the construction phase. Impacts associated with each crane pad would be reduced once seeded vegetation was established. The disturbance and alterations would not be visible from below the ridgeline.

Operational Phase

The greatest number of turbines (130) would be operated under this alternative. The turbines would be placed in strings along three separate ridgelines (Figure 2.4.1). Each turbine would be 210 feet in height to the center of the hub. Each of the three blades would be 115 feet in length, with an over-all diameter of 230 feet. Maximum blade height would be 325 feet above the surrounding landscape.

Under Alternative B, the west string would be about 0.8 mile in length and located along a short side-ridge, west of the main Cotterel Mountain ridgeline. This ridgeline resides within a Class IV designated area, but would be visible in the foreground-middleground zone from the Class II designated areas to the west, resulting in a direct impact to visual resources over the long-term. The visual impacts associated with this string would be amplified due to its proximity to the backcountry by-way (SH-77) and the residents of Albion. The string would be less than two miles away from SH-77 and approximately six miles away from Albion. There would be up to seven turbines in the west string. The west string would not be visible from I-84 or SH-81 east of the main ridgeline. When viewing the west string from KOP 3 and KOP 5, contrast would be greatest during the afternoon hours when the sun is in the west. The west string would be eliminated under Alternatives C and D.

The center string of wind turbines would be about 10.9 miles in length and placed along the spine of the main ridgeline of the mountain. Unlike the west string, the center string would be visible from the east side of the main ridgeline. The center string would reside within a Class IV designated area but would be visible in the middle-ground zone from a Class II designated area to the west that coincides with the Albion Valley and the scenic corridor associated with SH-77. The center string would be 6 miles away from Albion and SH-77. It would be visible 4 miles away from SH-81 and 3 miles away from I-84 at its closest point. The center string would be visible from these aspects resulting in change the character of the ridgeline landscape. Contrast would result when viewing the center string from the Albion and Raft River Valleys. Currently the ridgeline texture appears smooth and undulating. Operation of the center string would alter texture of the ridgeline. This alteration would reduce the boldness contrast between the ridgeline and the sky. Rotation of the turbine blades would draw the attention of the casual observer from the rural valley foreground to the ridgeline, which would appear more industrial.

The center string structures would contrast in scale with the surrounding landscape. Currently, there are no tall trees visible on the ridgeline. Vegetation on the ridge is more or less prostrate when viewed from the KOP. A small cluster of radio communication towers exists on the ridgeline in the southern

portion of the Proposed Project area. Although the radio towers are visible from Albion Valley, they are isolated to an area of approximately one acre. Operation of the center string would create a noticeable contrast in scale to the casual observer along the ridgeline. When viewed from the east (KOP 1 and KOP 2), the visual contrast of the center string would be greatest during the morning hours when the sun is in the east. When viewed from the west (KOP 3, 4, and 5) the visual contrast of the center string would be greatest during the afternoon hours when the sun is in the west. Compounding this landscape contrast is the increased sensitivity of the viewsheds due to relatively high public visibility from the residents of Albion and Malta, and motorists on both SH-77, SH-81 and I-84.

The east string would be visible from the east along SH-81 and the community of Malta. The community of Malta and SH-81 reside in a scenic corridor with increased levels of sensitivity due to the visibility from the roadway and the community residents. From this aspect, the impacts would be similar to those described above for the center and west strings. There would be more turbines on the east string than on the west string but fewer than the center string. The east string would not be visible from Albion Valley (KOP 4 and 5) but would be visible from Howell Canyon Road (KOP 3). Visual contrast would be greatest during the afternoon when the sun is in the west. When viewed from the east (KOP 1), the visual contrast of the center string would be greatest during the morning hours when the sun is in the east. When viewed from the west (KOP 3), the visual contrast of the east string would be greatest during the afternoon hours when the sun is in the west.

Under Alternative B, the proposed South Access Road would be visible from both the Howell Canyon road (KOP 3), Marsh Creek Events Center (KOP 5), and SH-77 City of Rocks Backcountry Byway. The visibility of the road cut in the side of the hill would contrast with the surrounding color, form, and texture of the hillside landscape. Impacts due to color contrast would result because the cut and fill process used to construct the road would result in lighter colored materiel on the hillside than the surrounding vegetation and rock outcrops. The dark greens and browns that give the hillside its existing color result from a combination of vegetation and rock outcrops. The roadcut would contrast with the current mix of color by presenting a thin swath of light brown substrate across the hillside. This color contrast would be more apparent in the spring and early summer when vegetation is more green than brown. The line of this road would generally follow the horizontal character of the landscape. The form of the hillside would be visibly altered as a result of the roadcut. The cutbank of the road would alter the shape if the hillside impact the background view from these areas, resulting in a visual impact over the long-term.

The structure at the junction of SH-77 and the proposed South Access Road would be expanded and operated as an O&M building to accommodate the project under this alternative. There could be an impact to visual resources associated with this proposed expansion to the extent that the facility becomes larger and more visible from the Class II area associated with SH-77. The expanded structure would not be visible from KOP 1, 2, or 4. Portions of the structure (communication towers, lights) may be visible from KOP 3 and 5.

Improvements to the North Access Road could have impacts by making the road more visible from the scenic corridor associated with SH-81 and I-84. Approximately one-half mile of the road improvement would take place within the scenic corridor, which is sensitive to visual impacts due to the large number of people who may see the improved road. These impacts would not result in stark contrasts to the existing landscape since roads already exist there. The proposed roads would be wider than the existing ones.

Transmission interconnect lines would be visible from the north and east side of the Proposed Project area (KOP 1 and 2). The majority of the eastern transmission interconnect line would be parallel to the existing Raft River Transmission Line and match it, in both height and form. The north transmission interconnect line would be visible from I-84, pass over SH-81 and through its associated scenic corridor. The northern transmission interconnect line would be visible to motorists in this area, resulting in long-term visual impacts. The eastern transmission interconnect line would pass through a Class IV designated area. The eastern transmission interconnect line would be visible from the scenic corridor associated with SH-81, resulting in a long-term visual impact.

Seasonal variations in visual impacts from all turbine strings, roads, substations and other infrastructure would result from weather patterns in the area. Spring and summer generally bring blueish skies and high clouds that would not obscure the view of the center string. Visual contrasts during this period would be greater than in the late autumn and winter months. Late autumn and winter often bring grayish skies and low clouds that would reduce contrasts. Fog may completely obscure the structures in the fall and winter.

4.13.4 Alternative C

Construction Phase

Under Alternative C, short-term impacts to visual resources due to construction of the Proposed Project may occur due to the amount of vehicle and heavy equipment traffic that would be visible to the casual observer. The estimated number of truck trips necessary to complete the project under this alternative would be 12,735. These impacts would be reduced from Alternative B but greater than Alternative D due to differences in the number of turbines and roads constructed. The number of truck trips necessary to complete the Proposed Project under this alternative would be 13 percent fewer than under Alternative B.

Impacts associated with construction of the North Access Road would be the same as described under Alternative B. Impacts from surface disturbance, traffic, and dust created by constructing the access road would be short-term. Impacts associated with the south access road would be less than those described under Alternative B because the existing road would not be relocated under this alternative. Construction of roads on the ridgeline would be less than Alternative B but greater than D. This alternative would require the reconstruction of about 3.2 miles of existing road and the construction of about 19.5 miles of new road.

Impacts associated with the visibility of cranes during construction would be similar but less widespread than those described under Alternative B because there would be fewer turbines constructed under this alternative.

Impacts from the construction of a transmission interconnect line would be similar to those described under Alternative B. The location of the impacts under this alternative would be different than Alternative B because there would only be one interconnect line under this alternative. The transmission interconnect line would be 19.7 miles in length under this alternative. There is over twice as many miles of new transmission interconnect line proposed under this alternative compared with Alternative B. However, the majority (approximately 15 miles) of the interconnect line would parallel the existing Raft River Transmission line where the Proposed Project interconnect line parallels the Raft River line. Impacts would be less than slight where the proposed transmission line parallels the existing one.

Impacts associated with the construction of the O&M building would be the same as those described under Alternative B.

Impacts associated with turbine pad laydown areas would be similar but less widespread than those described for Alternative B. The turbine pads under this alternative would be the same size as those described under Alternative B, but there would be fewer constructed. Impacts from turbine pad laydown areas would range from 62 to 75 acres.

Impacts associated with the surface disturbance from crane pad areas would be similar but less widespread than those described for Alternative B. The crane pads under this alternative would be the same size as those described under Alternative B, but there would be fewer constructed. Impacts from crane pad areas would range from 9 to 11 acres under this alternative.

Operational Phase

There would be fewer turbines operated under this alternative than under Alternative B. The number of turbines operated under this alternative would range from 81 to 98. A range of wind turbine sized would be considered. The smaller end of the range would be identical to the turbines described for Alternative B. The larger versions would be 262 feet in height to the center of the hub. Each of the three blades would be 164 feet in length, with an overall diameter of 328 feet. Maximum blade height would be 426 feet above the ground. Compared to Alternative B the center string would be about 1.5 miles longer towards the north and 1.5 miles shorter from the south.

Under this alternative, facilities would be similar to those described under Alternative B. In comparison, there would be: 25 percent to 38 percent fewer towers, slightly fewer miles of new road, nearly twice as many miles of new transmission interconnect line, the turbine hubs would be 20 percent higher, and the turbine diameter would be nine percent to 30 percent larger. The combined length of both turbine strings would be 14.5 miles with more space between each tower than Alternative B.

Impacts to visual resources from operation of the center string would be similar to those described under Alternative B. Under this alternative, the center string would be more visible from the east, west and north if the taller versions of tower were constructed. Visual impacts when viewing the center string from the south would be similar but less widespread than those described under Alternative B because the string would be trimmed by 1.5 miles on the southern end. Visual impacts to Albion Valley, SH-77, and SH-81 would be the same as described under Alternative B.

When viewed from the north, the Proposed Project would result in similar impacts to those described under Alternative B. By comparison, the Proposed Project would be more visible to motorists on SH-81 and I-84 due to a 1.5-mile extension to the north of the center string. Impacts to visual resources resulting from operation of the east string would be the same as those described under Alternative B. Under this alternative, the east string would be 1.25 miles shorter in length but the towers could be taller and the turbines could be larger. Impacts from the aspect of Howell Canyon Road and SH-77 City of Rocks Backcountry Byway would be less than those described under Alternative B due to the elimination of the west string.

Impacts associated with the southern access road would be less than those described under Alternative B due to the elimination of the hill cut below the telecommunication towers on the summit of Cotterel Mountain. Visual impacts associated with the improvement of the existing road under this alternative would result in a slightly more visible gravel surface in that site-specific area.

Expansion of the O&M building and improvements to the North Access Road would have the same impacts as described under Alternative B.

Impacts associated with transmission interconnect lines would be similar to those described under Alternative B, although the location of the impacts would be different under this alternative. There is over twice as many miles of new transmission interconnect line proposed under this alternative compared with Alternative B. The majority (approximately 15 miles) of the interconnect line would parallel the existing Raft River Transmission line. Impacts from the remaining portion of the interconnect line would be similar to those described for the eastern transmission interconnect line under Alternative B. Impacts would be slight where the proposed transmission line parallels the existing one.

Seasonal changes in visibility of the project would be the same as those described under Alternative B.

4.13.5 Alternative D

Construction Phase

Under Alternative C, short-term impacts to visual resources due to construction of the Proposed Project may occur due to the amount of vehicle and heavy equipment traffic that would be visible to the casual observer. The estimated number of truck trips necessary to complete the project under this alternative would be 9,750. These impacts would be reduced from Alternative B and C due to reductions in the number of turbines and roads constructed under this alternative. The number of

truck trips necessary to complete the Proposed Project would be 33 percent less than under Alternative B.

Impacts associated with construction of the North and South Access Roads would be the same as described under Alternative B. As with Alternative C, there would be modification of the existing south access road but no new road would be constructed there. Impacts from the construction of new roads on the ridgeline would be similar but less widespread than those described under either Alternative B or C because there would be fewer miles of road necessary to access the turbines under this alternative. Impacts from traffic, dust, and stockpiled materials created by constructing both the access roads and the main ridgeline road would be short-term. New road construction would total approximately 14.5 miles under this alternative. Reconstruction of about 2.9 miles of existing road would also be necessary under this alternative.

Impacts associated with the visibility of cranes during construction would be similar but reduced when compared to either Alternative B or C. The cranes would be less visible during construction because there would be fewer towers to be constructed, and both the east and west strings of towers would be eliminated under this alternative.

Impacts associated with equipment laydown areas would be the same as those described under Alternative B.

Impacts to visual resources associated with turbine pad laydown areas would be similar but less widespread than those described under either Alternative B or C because there would be fewer turbine pad laydown areas under this alternative. Turbine pad laydown areas would range between 66 to 82. Short-term impacts to vegetation on the ridgeline would occur on 50 to 63 acres under this alternative.

Impacts associated with crane pad areas would be similar but less widespread than those described for either Alternative B or C because fewer towers would be raised under this alternative. Impacts from crane pad areas would range from seven to nine acres under this alternative. Impacts from the construction of a transmission interconnect line would be the same as those described under Alternative C.

Impacts from construction of the operations and maintenance building would be the same as those described under Alternative B.

Operational Phase

The number of turbines operated under this alternative would range from 66 to 82. The turbines would be placed in a string along a single ridgeline (Figure 2.6.1 and Figure 2.6.2). This alternative would use the same size range and types of wind turbines as those proposed under Alternative C. Visual impacts associated with the operation of turbines would be similar but less widespread than either Alternative B or C because there would only be one string of turbines under this alternative.

Under this alternative, facilities would be similar to those described under Alternative B. In comparison, there would be: 40 percent to 50 percent fewer towers, 27 percent fewer miles of Proposed Project roads, nearly twice as many miles of new transmission interconnect line, the turbine hubs would be 20 percent higher, and the turbine diameter would be nine percent to 30 percent larger. Under this alternative, there would be a single string of turbines 11.6 miles long.

Impacts to visual resources from operation of the center string and when viewed from the north would be the same as those described under Alternative C.

Expansion of the O&M building and improvements to the North Access Road would have the same impacts as described under Alternative B.

Operation of the transmission interconnect line would be the same as those described under Alternative C.

The South Access Road would result in the same impacts to visual resources as those described under Alternative C. The North Access Road would result in the same impacts to visual resources as those described under Alternative B.

Seasonal changes in visibility of the project would be the same as those described under Alternative B.

4.13.6 Lighting and Dark-Sky Impacts

Sky glow refers to the cumulative impact from illumination coming from towns, cities, and other developed areas. It is the yellowish glow visible in the night sky when looking toward a nearby town or city. Sky glow can impact and degrade the visual quality of an area. It can also affect dark-sky activities such as recreational and scientific space observation.

As discussed in Chapter 2, it is anticipated that the Federal Aviation Administration (FAA) required lighting would consist of medium-intensity white lights flashing during daylight and twilight hours and red beacons flashing during all other hours. The use of such lights is common for structures exceeding 200 feet in height. During daylight, these lights are not expected to distract drivers or attract any more attention than the turbines themselves. During non-daylight hours and non-twilight hours, the lights would be apparent from the surrounding areas and would detract from the aesthetics of the night sky for those areas. The lighting of the turbines is not expected to create an abnormal distraction to drivers or produce other safety concerns.

At present, the Proposed Project area and immediately surrounding area are primarily dark at night. Existing light is generated from the lights of the residences and business in the towns of Albion and Malta, traffic safety lighting along I-84 north and east of the Proposed Project area, and lighting on cell phone and radio towers that are sited northeast of the of the Proposed Project. The flashing red lights associated with the turbines of the Proposed Project would be operated during nighttime hours

and would introduce a new element into the nighttime environment of the Cotterel Mountain area. These lights would be limited in number, red and directional with little potential to create sky glow.

At the O&M facility and substation(s), outdoor night lighting would be required for safety and security. This lighting would be restricted to the minimum levels required to meet safety and security needs. All lights would be hooded and directed to minimize backscatter⁶ and illumination of areas outside of the O&M and substation(s) sites. The O&M facility and substation(s) would create sources of light in areas where there are currently no light sources. Substation(s) lighting may not be visible from the communities in the vicinity of the Proposed Project due to shielding from vegetation and geologic features. Nighttime users of Cotterel Mountain would experience scattered views of the substation(s) lighting. The lighting of the O&M facility would potentially be visible to drivers along SH-77 as they approached Conner Summit while traveling both in a northerly or southerly direction. Because all lighting of the substation(s) and O&M facility would be hooded and directional, the potential of lighting to create sky glow is minimal.

4.14 HAZARDOUS MATERIALS

Information obtained during site observations, along with a review of regulatory agency data indicates that there are no hazardous substances currently used, stored or disposed of within the Proposed Project area.

4.14.1 Alternative A (No Action)

Under Alternative A, no impacts related to hazardous materials would occur from the Proposed Project.

4.14.2 Alternative B

During construction of Alternative B, BMP would be used to avoid spills, leaks, or dumping of hazardous substances. The potential to cause unmitigated hazardous materials impacts that could result from Alternative B is considered to be low.

4.14.3 Alternative C

The impacts under Alternative C would be the same as discussed under Alternative B.

4.14.4 Alternative D

The impacts under Alternative D would be the same as discussed under Alternative B and Alternative C.

⁶ Backscatter refers to the reflection of light back toward the ground by moisture or dust in the atmosphere.

4.15 FIRE MANAGEMENT

Impacts to fire and fuels could occur during the construction and operation phases of the Proposed Project. For purposes of this assessment fire management includes: suppression, fuels management, and fire rehabilitation (ESR) projects. The analysis takes into account guidance provided in the Cassia RMP and the South Central Idaho Fire Management Plan (USDI 2004).

4.15.1 Alternative A (No Action)

Alternative A, would have no impact on the ability suppress wildfire and manage surface fuels within the Proposed Project area.

4.15.2 Alternative B

Construction Impacts

The risk of human caused ignitions in the Proposed Project area could increase slightly over the short-term during construction activities. Operation of heavy machinery and work crews near flammable vegetation during periods of high fire danger (e.g., hot and windy summer days) would increase the potential for ignition. Welding, or other fabrication activities that produce sparks would pose the highest risks. The number of truck trips necessary to construct turbines, substations, and other facilities would also be the highest under this alternative.

In the event of an ignition within the Proposed Project Area, the presence of construction crews and equipment could pose a moderate hazard to fire suppression crews. Limited access to the Proposed Project area may cause traffic congestion (vehicle and radio) that could increase safety hazards and response times as construction crews evacuate the area, and suppression crews enter. Traffic congestion could lead to more acres burned from wildfire. Additional hazards to suppression crews include any machinery or vehicles left behind by construction crews, overhead hazards (towers, transmission interconnect lines, substations, etc.), and hazardous materials (e.g. fuel storage tanks).

Operational Impacts

Operation of constructed and improved roads could have long-term impacts to fire management. New and improved roads would provide better access to the Proposed Project area for both the public and firefighters alike. In the event of an ignition, fire suppression crew response time would decrease, resulting in the potential for earlier containment of wildfire and a reduction in acres burned. New roads would benefit fire managers indirectly by acting as fuel breaks in the event of fire suppression operations. Fuel breaks generally reduce the rate of spread of fire. Additional fuel breaks in the Proposed Project area would increase the ability of firefighters to suppress wildfire safely. The risk of human caused ignitions would increase if improved access roads resulted increased public visitation. The combination of improved access and lack of fuel associated with new roads could reduce average fire size in the Proposed Project area.

The Proposed Project would increase the number of safety hazards that firefighters may have to negotiate in the event of wildfire suppression within the Proposed Project area. Fire crews operating

from both the ground and the air would encounter increased safety hazards from towers, turbines, substations, and transmission interconnect lines. The presence of these structures may limit fire suppression strategies in the event of a wildfire in the Proposed Project area. For example, the use of aerial retardant may be reduced due to the presence of the windtowers. Safety hazards associated with the Proposed Project could force fire management to use indirect suppression tactics when responding to fires in the Proposed Project area if the safety risk is too great for direct suppression. A greater number of acres could burn within the Proposed Project area where indirect suppression tactics replace direct suppression tactics.

Electrical trenching could limit fuel break construction in site specific areas. While the majority of electrical trenching would follow a fuel break associated with new roads constructed under this alternative, the ability to widen the fuel break could be limited due to the electric trenches. Fuel breaks created by earth moving equipment such as bulldozers may not be appropriate where electrical trenching would exist. Electrical trenches could also limit post fire emergency stabilization and rehabilitation efforts. Emergency stabilization and rehabilitation practices often utilize rangeland drills, disks, or other heavy equipment that may not be appropriate near an electrical trench. This alternative proposes the most miles of electrical trenching.

The towers would effectively increase the lightning-attractive area on Cotterel Mountain. The probability of lightning striking an object is found by multiplying the lightning-attractive area of the object by the local ground-flash density (lightning strikes to ground per unit area, Hasbrouck 2004). This may have an influence on the number of lightning caused fire starts in the area.

The presence of towers, wind turbines, and substations along the ridgeline could have an adverse impact on communications to the extent that they could scatter radio signals used by fire line personnel to communicate during fire management activities.

4.15.3 Alternative C

Construction Impacts

The potential for ignition within the Proposed Project area during construction activities would increase under this alternative for the same reasons discussed under Alternative B. The actual ignition potential under this alternative would be slightly less than Alternative B because there would be fewer truck trips necessary to complete the project. The presence of construction crews, equipment, and hazardous materials in the event of a wildfire would have the same impacts to mobilization and operation of fire suppression crews as described under Alternative B.

Operational Impacts

New and improved roads would increase vehicle access to the Proposed Project area. Better access to the Proposed Project area could shorten firefighter response times in the event of wildfire. These impacts would be the same as Alternative B. The risk of human caused ignitions from increased vehicle access to the public would be the same as Alternative B.

New roads in the Proposed Project area that act as fuel breaks during fire suppression activities would have similar but less widespread impacts than those described under Alternative B. There would be fewer miles of roads operated under this alternative than under Alternative B.

The impacts to fire management associated with safety hazards from turbines, substations and transmission interconnect lines would be similar to Alternative B, but less widespread under this alternative. Under this alternative, there would be fewer towers, turbines, and substations constructed. Although there would be more transmission interconnect line constructed under this alternative compared to Alternative B, the majority of proposed transmission lines under this alternative would follow existing lines. Therefore, the overall safety landscape in terms of fire and fuels management would be less adversely impacted under this alternative, than under Alternative B.

The potential for lightning strikes would be similar to Alternative B, but less widespread under this alternative because there would be fewer turbines constructed. Impacts to fireline construction and emergency stabilization and rehabilitation activities would be similar to Alternative B, but less widespread under this alternative because fewer miles of electrical trenching are proposed.

Impacts to radio communications from proposed structures would be similar to Alternative B, but less widespread under this alternative because fewer towers are proposed.

4.15.4 Alternative D

Construction Impacts

The potential for human caused ignition of flammable vegetation during construction activities would exist for the same reasons described under Alternative B. Actual ignition potential under this alternative would be less than either Alternative B or C because fewer truck trips would be necessary to complete construction. The presence of construction crews, equipment, and hazardous materials in the event of a wildfire in the proposed project area would have the same impacts to mobilization and operation of fire suppression crews as described under Alternative B.

Operational Impacts

Impacts to incident response times and human ignition potential within the Proposed Project area would be similar to those described under Alternative B, but less widespread under this alternative because fewer roads would be constructed. This alternative proposes fewer new roads than either Alternative B or C.

New roads in the Proposed Project area that act as fuel breaks during fire suppression activities would have similar impacts to fire suppression as those described under Alternative B, but would be less wide spread under this alternative because there would be fewer new roads constructed.

The impacts to fire management activities associated with additional safety hazards from turbines, substations, and transmission interconnect lines would be similar to Alternative B, but less widespread under this alternative because there would be fewer structures. The safety hazard created

by proposed transmission lines and substations would be the same as Alternative C. However, there would be fewer turbine towers under this alternative than under either Alternative B or C.

The potential for lightning strikes would increase for the same reasons discussed under Alternative B. The potential for lightning strikes would be slightly less under this alternative than either Alternative B or C because there would be fewer turbine towers constructed.

Impacts to radio communications from proposed structures would be similar to Alternative B and C, but less widespread under this alternative because fewer towers are proposed.

4.16 EFFECTS OF ADAPTIVE MANAGEMENT

Adaptive Management is a core set of principles and values, and a formal process that would guide the planning, design, construction, operation, monitoring and management of the Cotterel Wind Energy Project (See Section 2.5.4). The overall goal of the adaptive management process is to identify and minimize adverse environmental, health, safety, social and economic affects through regular formal collaborative and iterative information sharing, feedback, response and actions between BLM, the Applicant and the Technical Steering Committee.

During project design and construction project facilities would be micro-sited, to minimize impacts to resources through application of the adaptive management process. During operation of the Proposed Project data collected through monitoring would provide information on the effects to wildlife, particularly avian species and bats. These effects can occur in a variety of ways but based on data collected at other wind farms, are chiefly associated with bird collisions with the large blades that drive each of the wind turbines (referred to as the rotor swept area of each turbine). If there are certain turbines along the string that are contributing to bird and bat mortality that would trigger the need to implement management actions to reduce these effects.

4.17 CUMULATIVE EFFECTS (IMPACTS)

Cumulative impacts result when the effects of an action are added to or interact with the combined effects of all other ongoing actions in a particular place and within a particular time. While impacts can be differentiated as direct and indirect, and short-term and long-term, cumulative impacts consider the compounding effects of all actions over time and space. Thus, the cumulative impacts of an action can be viewed as the total combined effects of all activities on a particular resource, ecosystem, or human community, no matter what entity (federal, non-federal, or private) is taking the actions (EPA 1999)

This cumulative impacts section provides a general description of regional influences; and then discusses the cumulative impacts for each resource by alternative. The cumulative impact discussion combines the regional influences (influences outside the Proposed Project area) with the individual resource impacts (influences inside the Proposed Project area as a result of the proposed alternatives) as discussed in Section 4.0 Environmental Consequences.

Regional influences discussed include: changes in land use; recreation; invasive species and noxious weeds; Special Status Plants; livestock grazing; and lands and realty actions (projects).

Each discussion of cumulative impacts begins with a description of the region of influence for that resource followed by a discussion of past and current trends, as well as future anticipated trends:

- Past and current trends describe the current regional status of the resource being discussed, as well as noteworthy events from the past that contributed to the current situation.
- Future anticipated trends discuss the potential outcomes of current trends in the foreseeable future.
- Following the past, current and future trends section is a description of cumulative impacts for each of the alternatives. This part of the analysis addresses the region wide affect that management proposed could have on the resource being discussed.

The time of influence for which cumulative impacts are analyzed is from the operation of the Proposed Project to the year 2036. The year 2036 was selected because in that year, the operators of the Proposed Project would need to either apply for a new operational permit, or remove the project and reclaim the project area.

4.17.1 Regional Influences

Wind Energy Development

Wind power grew rapidly in 2005 both nationally and worldwide, becoming more and more competitive as natural gas prices jumped and crude oil prices reached record highs. Improved technology, a significant federal production tax credit and pressure on utilities to use clean energy sources has helped fuel the growth across the nation. Idaho ranks 13th in the nation in wind power potential according to the Idaho Department of Water Resources Energy Division. Commercial wind farms in Idaho include the 10.5 MW Fossil Gulch near Hagerman; 324-kilowatt Lewandowski wind farm near Mountain Home and, the 64.5 MW Wolverine Creek wind farm near Idaho Falls.

Currently, there are other proposed wind power projects on private land that have received county approval for construction: a trio of 200 MW projects near Idaho Falls by Ridgeline/Airtricity; a pair of 200 MW projects near American Falls by Ridgeline/Airtricity; a 200 MW project near American Falls by Windland, Inc. (Windland); and four 10 MW projects near Hagerman.

Currently there are three other wind energy ROW applications on BLM managed lands in Idaho. These sites are located at Danskin Mountain, north of Mountain Home, at the King Hill area north of Glenns Ferry, and at Brown's Bench southwest of Twin Falls. These projects are in various phases of wind speed monitoring. There is no guarantee that these projects will result in the construction of wind energy facilities at these sites.

There are currently over 30 anemometers scattered across eastern, southcentral, southern and western Idaho, collecting data on wind speed. These anemometers are located on private, state, Tribal, and federal lands. Whether these sites would be developed into commercially viable wind power projects is unknown at this time (Figure 4.16-1).

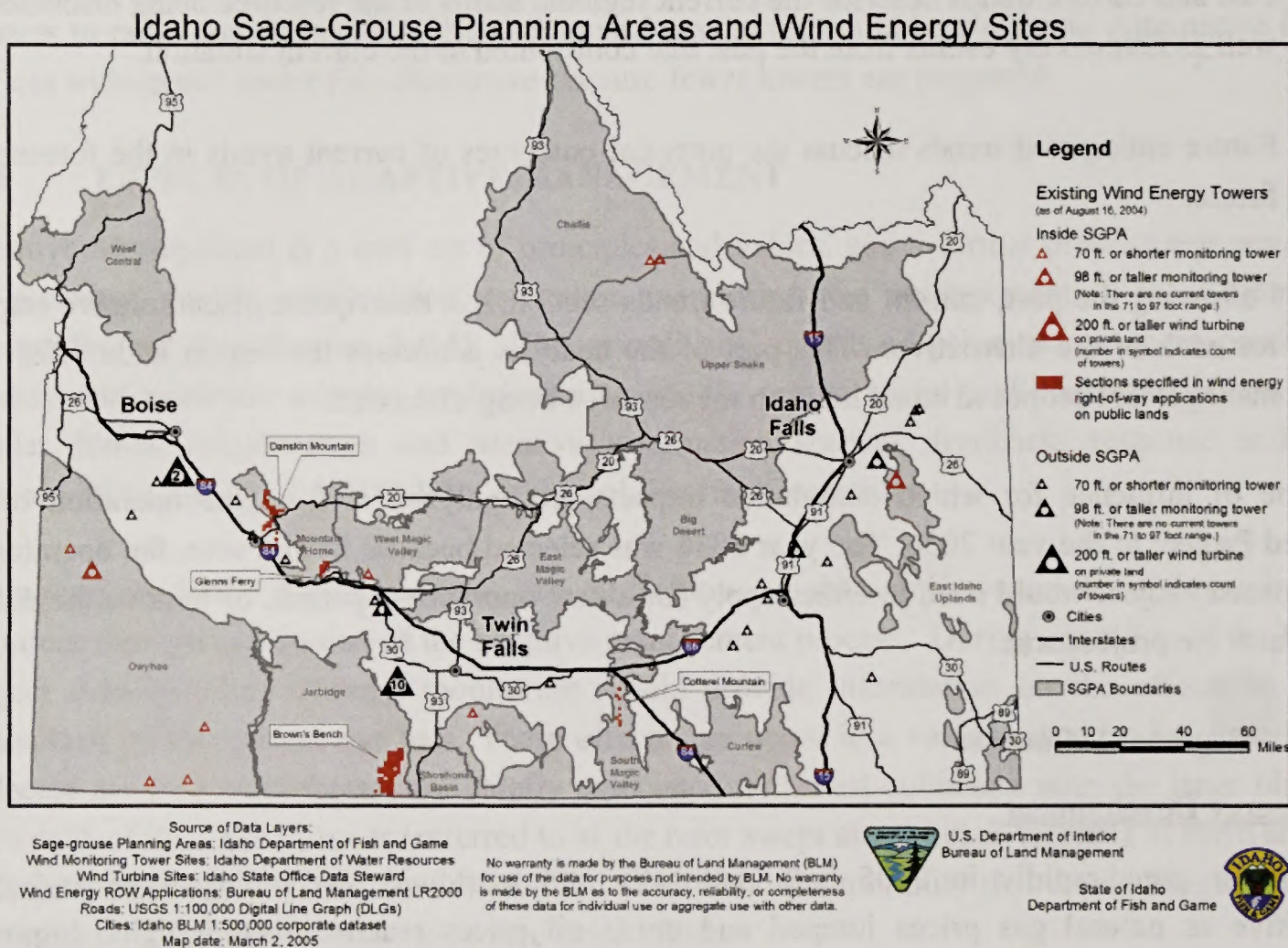


Figure 4.17-1. Idaho Sage-grouse Planning Areas and Wind Energy Sites.

Recreation

The natural beauty and outstanding recreation opportunities draw thousands of visitors to Idaho annually. As the U.S. and Idaho populations grow, so too does demand for outdoor recreation opportunities. In addition, changing industries and life-styles in Idaho and the surrounding region are contributing to a shift in natural resource use and management away from traditional product-oriented industries to more amenity-based industries. Tourism is the fastest growing economic activity in Idaho, and will likely intensify over the next five to 10 years based on current population estimates (ISPR 2002). While outdoor recreational activities and tourism can help many rural communities diversify or supplement a reduction in historic consumptive, industrial-based activities, proactive management will be needed to minimize the social and environmental costs associated with increased non-consumptive uses. Maximizing benefits while minimizing or mitigating the costs to natural resources is vital to the sustainability and health of these communities.

The 2003-2007 Idaho Statewide Comprehensive Outdoor Recreation and Tourism Plan (SCORTP), developed under the direction of the Idaho SCORTP Task Force (ISPR 2002), ranked the relative importance of 19 issues associated with outdoor recreation. Idahoans ranked the following as their top 10 issues:

1. Protecting water quality
2. Protecting existing access to public lands
3. Protecting natural resources on public lands
4. Educating youth about natural resources and the environment
5. Controlling invasive species
6. Educating adults about natural resources and the environment
7. Providing recreation safety instruction to youth
8. Providing outdoor recreation education for youth
9. Providing access for the disabled
10. Rehabilitating outdoor recreation facilities

In addition to these issues, several key outdoor activities have increased appreciably in Idaho and are likely to continue to increase in the future (Cordell *et al.* 2004; ISPR 2002). These activities were also found to be more prevalent in Idaho and other rural states than the rest of the nation as a whole. They include, but are not limited to motorized vehicle use, hunting, and water-based recreation. A number of other activities, including non-pool swimming, canoeing, and visiting a beach or waterslide are generally associated with water-based activities and were therefore included (Cordell *et al.* 2004). According to a national study by Cordell *et al.* (2004), the Rocky Mountain Region will see a significant demand increase for water-based activities over the next several years.

The demand for OHV use has grown significantly. In 1960, when the first of the U.S. national survey was done for the Outdoor Recreation Resources Review Commission, off-road motorized recreation was not even on the “radar” as a recreational activity. However, from 1982 to 2001, OHV use became one of the fastest growing activities in the country, growing in number of participants greater than 12 years old by over 100 percent (Cordell *et al.* 2004). Based on their survey (from Fall 1999 to summer 2000), an estimated 37.6 million people 16 years of age or older (17.6% of the population) had ridden or driven motor vehicles off-road at least once in the past 12 months. That number increased to an estimated 49.6 million by fall 2003 to Spring 2004 (rising to 23.2% of the population).

Similarly, according to the 2002 SCORTP report, Idahoans participate in more wildlife-based activities than the rest of the nation, with hunting being the number one activity. Idahoans hunt big game four times as often as the national average, and hunt waterfowl nearly six times as often. Non-consumptive wildlife activities, such as viewing animals, were also higher than the national average (ISPR 2002).

Based on current population trends, the demand for these and other outdoor recreational activities in Idaho and the surrounding region is likely to increase in the future. As a result, the region will need resources for biking, picnicking, walking, camping and family gatherings in coming years to meet

population projections (ISPR 2002). Based on these estimates, a greater emphasis is likely to be placed on facilities development and management of recreational activities in order to reduce the overall potential impacts to natural resources and conflict between user groups.

Invasive Species and Noxious Weeds

Invasive species and noxious weeds are harmful, non-native plant species that damage our economy and environment by displacing ecologically or economically valuable native rangeland species or agricultural crops or threaten the integrity of streams and lakes. As international commerce and travel increases, so does the threat that unwanted species will arrive in Idaho or infest areas where they are not now established.

Over the years, Idaho, like all other states, has enacted statutes and created programs designed to prevent and manage a wide variety of invasive species. Often, these programs are administered in cooperation with various partners and range from monitoring site-specific populations to landscape-wide trends. The agencies involved in this important work include: Cassia and Minidoka County Weed Departments; Idaho Department of Lands; Idaho Department of Fish and Game; Idaho Transportation Department (ITD); Idaho Power Company; private landowners; and U.S. Department of Agriculture's Animal, Plant Health Inspection Service (APHIS).

In addition, the University of Idaho colleges of Agriculture and Natural Resources and the Cooperative Extension Service play important research and educational roles. Local governments, industries and their associations, various interest groups and individuals work cooperatively in control and educational efforts. These groups often come together to develop cooperative weed management areas and the Idaho Weed Awareness Campaign.

The Idaho Strategic Plan for Managing Noxious Weeds was released in February of 1999, which created Statewide Cooperative Weed Management Areas (CWMA) that develop and integrate weed management plans. These weed management programs are responsible for identifying local and regional invasive species and noxious weed concerns and educating local landowners on treatments and government aids. Currently there are 32 successfully functioning CWMA that cover approximately 82% of the state, including the area surrounding Cotterel Mountain. This cooperative process has since lead to the establishment of the Idaho Invasive Species Council (IISC), which was established by Governor Kempthorn's Executive Order No. 2001-11. The primary task of IISC is to "provide policy level direction and planning for combating harmful invasive species infestations throughout the state and for preventing the introduction of others that may be potentially harmful". In addition to these and other invasive species and noxious weed management programs implemented by the state, and on a county-by-county basis, various federal statutes have been put in place to combat invasive species and noxious weeds.

Noxious weed treatments in the Proposed Project area could result in cumulative benefits within the larger region of influence. Where new populations of noxious weeds were eradicated within the Proposed Project area, they would be eliminated as a possible seed source for other areas in the

region. This would reduce crop losses, decrease wildlife habitat degradation, and improve recreational site quality. Overall impacts would be less than slight.

Special Status Plants

In addition to regulatory and other protective measures associated with public and state lands, areas containing known special status plant populations generally have greater protection, which has beneficial long-term effects to those species. Private lands have no regulations to protect special status plants; therefore, impacts to individual populations from surface disturbing activities on private lands could reduce the overall connectivity of the regional population and lead to future extinction or genetic separation. However, state and federal agencies have been working with private individuals and corporations to reduce impacts through voluntary conservation measures. These agreements could increase protection of special status plants regardless of ownership, which would have beneficial regional effects.

Livestock Grazing

By 2009, public land grazing within and outside the Proposed Project area will be managed under Idaho Standards and Guides for Livestock Grazing Management to enhance healthy, functioning and productive rangelands.

Where livestock operators on private lands in the region continue not to implement BMP, riparian area vegetation and downstream water quality could continue to be adversely affected. For example, where livestock are allowed unrestricted access to stream banks, or where upland grazing increases off-site erosion and sedimentation, pollutants could be increased locally and travel downstream. Unmanaged grazing in riparian areas may also reduce stream bank stability, resulting in blowouts during high run-off events and increased sediment loads that reduce water quality further downstream. Infestations of invasive species on private lands, including noxious weeds, may become a seed source for lands elsewhere. Riparian vegetation would be adversely affected by invasion of noxious and other weed species. Riparian areas could improve where land managers install range improvements, such as fences, cattle guards, pipelines, and water developments to enable livestock use while protecting water quality and riparian vegetation.

Land and Realty Actions (Projects)

Cumulative impacts are an aggregate of many direct and indirect effects and include actions, which have occurred or can reasonably be expected to occur both within and outside of the Proposed Project area. The following are key cumulative actions within the vicinity of the Proposed Project assessed in the EIS (Table 4.16-1).

Table 4.17-1. Land and Realty Actions (Projects) Located in the Region of Cotterel Mountain.

Project	Status	Purpose	Expected Completion	Contact
Idaho State Highway 77	In Progress	Road Improvement	December 2005	ITD
Idaho State Highway 81	In Progress	Bridge Reconstruction	May 2006.	ITD / Cannon Builders, Inc. of Blackfoot, Idaho
City of Rocks Back County Byway	Proposed	Road Improvement	Pending	ITD
Gravel Pit (BLM Project # ID-220- 2005 - CE-531)	Proposed	Aggregate Source	Pending	BLM

Table 4.17-1. Land and Realty Actions (Projects) Located in the Region of Cotterel Mountain.

Project	Status	Purpose	Expected Completion	Contact
Feedlots (2)	Proposed	Commercial Livestock	Pending	Cassia County
	Description: Applications have been submitted by private developers to Cassia County Officials for the construction and operation of contained animal feeding operations. There would be two separate operations, pending approval.			
	Location: Raft River Valley and Cassia County.			
Geothermal Exploration	In Progress	Commercial Energy Development	Ongoing	U.S. Geothermal
	Description: U.S. Geothermal is conducting geophysical exploration. The goal of U.S. Geothermal is to develop a commercially viable geothermal electrical generation facility on private land.			
	Location: Private and BLM managed lands south of Jim Sage Mountain. Their proposed development would be approximately 25 miles south of the Proposed Project area.			
Rights-of-Way (3)	Pending	Potential Energy Development	Unknown	BLM
	Description: Applications for ROW have been submitted to the BLM. Various phases of windspeed monitoring are currently being conducted at three different sites.			
	Location: Danskin Mountain, north of Mountain Home, Idaho. King Hill area North of Glens Ferry, Idaho. Brown's Bench, southwest of Twin Falls.			
Wind Power	Completed	Energy Generation	N/A	Private
	Description: Three operational wind turbines.			
	Location: South of Interstate 84, Between Boise and Mountain Home, Idaho.			

Table 4.17-1. Land and Realty Actions (Projects) Located in the Region of Cotterel Mountain.

Project	Status	Purpose	Expected Completion	Contact
Wind Power	Completed	Energy Generation	N/A	Exergy
Description: Seven operational wind turbines.				
Location: Near Hagerman, Idaho, south of the Snake River.				
Wind Power (3)	Approved by County	Commercial Energy Development	Unknown	Ridgeline / Airtricity
Description: A trio of 200 MW projects has received county approval.				
Location: Near Idaho Falls, Idaho.				
Wind Power (2)	Approved by County	Commercial Energy Development	Unknown	Ridgeline / Airtricity
Description: A pair of 200 MW projects has received county approval.				
Location: Near American Falls, Idaho.				
Wind Power	Approved by County	Commercial Energy Development	Unknown	Windland
Description: A 200 MW project has received county approval.				
Location: Near American Falls, Idaho.				
Wind Power (4)	Approved by County	Commercial Energy Development	Unknown	Exergy
Description: Four 10 MW projects have received county approval.				
Location: Near Hagerman, Idaho.				

Table 4.17-1. Land and Realty Actions (Projects) Located in the Region of Cotterel Mountain.

Project	Status	Purpose	Expected Completion	Contact
Wind Speed Monitoring	Ongoing	Energy Development	Unknown	N/A
	Description: Over 30 wind-monitoring towers collecting data on wind speed.			
	Location: Scattered across eastern, southcentral, southern, and western Idaho. These towers are located on private, state, Tribal, and federal lands.			
Oakley Reservoir	Completed	Irrigation / Recreation	N/A	U.S. Army Corps of Engineers
	Description: The reservoir was build as an earthen dam on Goose Creek. The reservoir was completed in 1911. It has a current usable capacity of 77,400 acre-feet. The reservoir does not have a channel to convey and release from the emergency spillway to the Snake River, causing a flooding hazard for the towns of Oakley and Burley.			
	Location: The reservoir is located in southern Cassia County, approximately five miles south of the town of Oakley, Idaho.			
Cow Gulch Exclosures (BLM # ID-220-2005-CE-973)	Proposed	Rangeland Improvement	Unknown	Nancy Ady, (208) 677-6685
	Description: Information at BLM Burley Field Office.			
	Location: South of Albion.			
Howell Creek Electric Fence (BLM # ID-220-2005-CE-972)	Proposed	Rangeland Improvement	Unknown	Nancy Ady, (208) 677-6685
	Description: A temporary electric fence will be constructed to create an exclosure. Further information at Burley Field Office, U.S. BLM.			
	Location: Howell Creek in Cassia County.			
Aggregate Quarry Expansion Permit (BLM # ID-220-2005-DNA-902)	Pending	Source of construction material	Unknown	Forrest Griggs, (208) 677-6667
	Description: Application has been made requesting additional 50,000 cubic yards of material to be mined at the quarry over ten years.			
	Location: Marion Pit, four miles north of Oakley, Idaho.			

Table 4.17-1. Land and Realty Actions (Projects) Located in the Region of Cotterel Mountain.

Project	Status	Purpose	Expected Completion	Contact
Rock Garden Quarry (BLM # ID-220-2005-EA-985)	Pending	Quarry Decorative Stone	N/A	Forrest Griggs, (208) 677-6667
	Description: Operator is transitioning from Notice of Intent to Plan of Operation.			
	Location: Middle Mountain, eight miles south of Oakley, Idaho.			
Fish Creek Quarry Expansion	In Progress	Quarry Stone	April 2006	Steven Flock (208) 678-0430 sflock@fs.fed.us
	Description: Expand stone quarry to 29 acres.			
	Location: Township 15 South, Range 23 East, Section 10, Boise Meridian, Albion Division of the Forest Service.			
Conner Creek Allotment Enclosure #2 (BLM # ID-220-2005-CE-984)	Proposed	Rangeland Improvement	Unknown	Nancy Ady (208) 677-6685
	Description: Build an enclosure around seep. Additional information available at the BLM Burley Field Office.			
	Location: West of Conner, Idaho.			
Conner Creek Fence Realignment (BLM # ID-220-2005-EA-843)	Proposed	Rangeland Improvement	Unknown	Nancy Ady (208) 677-6685
	Description: Realigning Fence. Additional information available at the BLM Burley Field Office.			
	Location: West of Connor, Idaho.			
Wickel Spring Development	Proposed	Rangeland Improvement	Unknown	Nancy Ady (208) 677-6685
	Description: Develop spring and install pipeline and two troughs.			
	Location: Northwest of Conner, Idaho.			

Table 4.17-1. Land and Realty Actions (Projects) Located in the Region of Cotterel Mountain.

Project	Status	Purpose	Expected Completion	Contact
Pomerelle Mountain Resort	Pending	Recreation	Unknown	Resort Office (208) 673-5599
	Description: The project would likely involve construction of additional ski runs, facilities, and lifts to accommodate additional users.			
	Location: Mount Harrison, Sawtooth National Forest, Idaho.			
Oakley Stone Quarry	In Progress	Mining	Ongoing	N/A
	Description: An open pit decorative stone quarry operation expansion.			
	Location: South of the town of Oakley, Cassia County.			
Vegetation Treatments	Various	Hazardous Fuels Reductions and Rangeland Seedings	Complete	Rance Marquez (208) 677-6697
	Description: These are various vegetation manipulations on BLM lands in the region. Treatments include prescribed fire, mechanical fuel reductions, and chemical fuel reductions. Treatments have ranged from less than five acres to over 3,000 acres in the past. These treatments are ongoing and individually evaluated under NEPA requirements for environmental effects. Individual projects are not listed under this entry due to the extensive number of projects involved.			
	Location: The locations of the vegetation treatments considered to have potential cumulative effects on various resources are generally within 15 miles of the Proposed Project area.			

4.17.2 Cumulative Impacts by Resource

Physical Resources

Air Quality

The construction phase of the Proposed Project would result in some release of dust and particulates into the atmosphere due to surface disturbance during road building, facility construction, and cement mixing. However, these impacts would be temporary and site specific. The cumulative impact would be less than slight when considered within the context of other projects in the vicinity of the Proposed Project or throughout the southern Idaho. The operation of the Proposed Project would not result in any measurable impacts to air quality and would not affect Cassia County's attainment status. Therefore, the Proposed Project would not result in cumulative impacts to air quality.

Geology

Current resource uses, such as grazing and recreation, would continue to be the primary foreseeable uses for the area. In the past, structures and roads built for access, may have affected the geology of the area, resulting in the current status. There are no other projects in the foreseeable future that would require drilling or blasting; therefore, geologic resources are not likely to be affected appreciably in the future. However, future ROW could be granted that require drilling or blasting. It is expected that geologic hazards would be avoided by all development projects wherever feasible. The Proposed Project would not result in cumulative impacts to geologic hazards.

Soils

Current resource uses, such as grazing and recreation, would continue to be the primary foreseeable uses for the area. On Cotterel Mountain, the existing roads and the communication site at the summit have resulted in past and ongoing ground-disturbance. Other uses in the area including agriculture, changes in vegetation composition and the spread of invasive weed species have also affected soils. In the future, additional ROW that include ground-disturbing activities could be granted. Overall, the estimated cumulative impacts to soil resources as a result of the Proposed Project would be expected to be negligible. Therefore, the Proposed Project will not result in cumulative impacts to soils.

Water Resources

The region of influence for this analysis of cumulative impacts is defined by the existing highways. The northern and eastern boundaries are defined by SH-81 and the southern and western boundaries are defined by SH-77. This region was selected because it surrounds the Proposed Project area. Cumulative impacts that could arise from the Proposed Project in concert with other projects would likely only be detectable within the region. Outside this region, cumulative impacts to water quantity and quality that result from the Proposed Project in addition to other projects would not be detectable or attributable to the Proposed Project.

The past and current trends of water resources within the region have been impacted by non-point source pollutants such as agricultural runoff and sediment. These impacts are tied to historic and

current land use within the region. Past projects including road development, development of springs and wells, and other ground-disturbing activities may have impacted water resources in the area.

Future anticipated trends of land use patterns within the region are not expected to change drastically. Limited residential development may occur in Albion Valley and those lands associated with Marsh Creek. These developments are not expected to appreciably impact water quality within the region.

Alternative A – There would be no action under this alternative and no associated cumulative impacts.

Alternative B – The Proposed Project would use BMP to avoid impacts to 303(d) listed streams and other water resources. If future ROW are granted that allow ground-disturbing projects, BMP will also be applied. Therefore, cumulative impacts to water resources are not expected.

Alternative C – The cumulative impacts to water resources will be the same as Alternative B.

Alternative D – The cumulative impacts to water resources will be the same as Alternative B.

Noise

The region of influence considered for the analysis of cumulative impacts resulting from noise associated with the Proposed Project is Cassia County. This area was selected because noise that occurs as a result of the Proposed Project could have a cumulative effect when considered in concert with other projects in the county. The Proposed Project would not contribute cumulatively to noise impacts resulting from projects outside the county.

The past and current trends of cumulative impacts from noise include past projects including road development, the communication site development, and other projects using heaving machinery may have impacted noise levels. Noise in the region has been generated largely from traffic and construction activities. Impacts are generally site specific and temporary within the region, except for in the city of Burley where traffic noise is more constant.

The future anticipated trends of noise within the region are not anticipated to change drastically. About 60% of the new residents of Cassia County are expected to settle in or around one of the established communities in the next few years. The bulk of the remainder of the new residents are expected to seek housing in the areas along the Snake River and in "Country Living" environments in the rural areas of the county (Cassia County Comprehensive Plan 1992). The community of Albion will likely experience limited growth in population and will remain an important community for recreational users to obtain lodging, supplies, and food.

County planners in the region will continue to evaluate industrial and commercial project proposals as efforts to diversify the economy. Increased development of Burley and construction of small-scale structures elsewhere within the region of influence are anticipated.

The agricultural industry has the largest influence on noise levels within the region. Seasonal harvest and transport of crops require operation of heavy machinery. The machinery is audible as it travels from fields to processing, packaging, and distribution facilities. Construction projects involving roads, houses, and general infrastructure also contribute to noise levels within the region. Heavy machinery operation during construction creates noise at local scales.

Alternative A – There would be no action under this alternative and no associated cumulative impacts.

Alternative B – Noise levels within the region would be affected during the construction phase of the Proposed Project. Construction activities would include the use of explosives and heavy equipment. Blasting would be audible from some areas within the region. While heavy equipment would not be audible from outside the Proposed Project Area, traffic associated with travel to and from the project site would increase within the region. The sound of explosives and increased noise from traffic could have a cumulative impact if these sounds were heard in concert with heavy equipment traffic associated with other projects within the region. These impacts would be temporary and would cease once the construction phase was completed. There would be no cumulative impacts to noise from the operational phase of the Proposed Project.

Alternative C – The impacts associated with the construction phase of the Proposed Project area would be similar but slightly less than Alternative B. The construction period would be shorter under this alternative because there would be fewer turbines, roads, and substations constructed compared to Alternative B. There would be no cumulative impacts to noise from the operational phase of the Proposed Project.

Alternative D – The impacts associated with the construction phase of the Proposed Project Area would be similar but slightly less than either Alternative B or C. The construction period would be shorter under this alternative because there would be fewer turbines and roads compared to either Alternative B or C. There would be no cumulative impacts to noise from the operational phase of the Proposed Project.

Hazardous Materials

The Proposed Project would not generate or use any hazardous materials. Therefore, there would be no cumulative impacts expected from the Proposed Project.

Biological Resources

Vegetation

The region of influence includes both Cassia and Minidoka Counties. This region was selected based on the primary influences to vegetation (invasive species, recreation, fire, and livestock grazing) and regional impacts.

The past and current trends of vegetation include grassland, shrub steppe, and juniper communities that have historically been the dominant upland vegetative communities in the Snake River Plains and surrounding highlands (Gibbs 1976; Vale 1975; Townsend 1839). However, a variety of human activities, such as conversion to agricultural or urban uses, livestock grazing, recreation, and the introduction and spread of invasive species and noxious weeds, have combined to alter the structural and functional components of these systems overtime (Sheley *et al.* 1999; Vitousek *et al.* 1996; Anderson and Holte 1980). The culmination of these activities has been the augmentation of fuel loads from annual grasses, and the subsequent change in fire regimes, resulting in an enhanced rate of degradation throughout the region (Pellant 1990; Peters and Bunting 1992). The remnant shrub communities are generally fragmented with understories dominated by annual grass, which increases their risk for fire and further conversion to exotic annual dominated communities (Sheley *et al.* 1999). While native perennial communities persist within the Snake River Plains, their populations continue to have an overall downward trend.

Future trends associated with vegetation are: increased public awareness and education of grassland, shrub-steppe, and juniper ecosystems; proactive recreation, transportation, fuels, and weed management plans and programs; and increased emphasis on rehabilitation and restoration of degraded or disturbed sites toward a more natural status. Based on the current population trends and future population growth, there would be a need for greater access to natural resources for recreation and development. In many cases, increased users and reduced resource availability would further intensify adverse impacts to vegetation throughout the region. Conservation measures would need to increase at a rate equal to or greater than consumption in order to maintain or improve the condition of remnant grassland and shrub steppe communities. In addition, if upland vegetation communities could be maintained or improved through proactive management practices, the genetic interchange and long-term viability of special status plant species that occur throughout the region could also be improved.

Regional influences include population increases where the number of users and type of uses on public, state, private, and other lands is also likely to increase. In many cases, increased users and reduced resource availability would further intensify impacts to vegetation throughout the region. The loss of upland vegetation and special status plant species in the region could include impacts from projects such as: the construction and maintenance of I-84; vegetation treatments; rural development; agricultural development that removes shrub steppe habitat; wildfire and prescribed burning; construction of transmission lines; livestock water developments; and removal of riparian vegetation. Adverse impacts associated with increased consumptive uses (development, livestock grazing, recreation, and other soil disturbing activities) in and around the region could include increased concentration from livestock and wildlife, altered fire regimes, and increased populations of invasive species and noxious weeds. In addition, agricultural practices, including the application of herbicides and pesticides could also impact vegetation in the region. This would lead to an overall impact to upland vegetation in the region and a continuation of the current downward trends of vegetation health in the region.

Increased emphasis on rehabilitation and restoration for habitat protection (sage-grouse, big game etc.), as well as incentives for private restoration and increased public awareness of invasive species and noxious weeds, would also have a cumulative impact to vegetation. As recreation needs increase and desirable resources become increasingly limited for public use, the probability of the public becoming more aware of, and more educated on, resource issues would be likely to increase. The result may be an increase in public complaints associated with consumptive resources uses and a shift in management strategy. In addition, agricultural lands adjacent to the Proposed Project area may eventually be developed for rural residential or commercial properties. If this occurs, the amount of wildland urban interface around the project area would increase. Management practices associated with the wildland urban interface of public lands, fire suppression, fuels treatments, and stabilization and rehabilitation efforts would need to be enhanced. These efforts would have cumulative impacts on vegetation in addition to restoration projects and increased education.

Alternative A – There would be no action under this alternative and no associated cumulative impacts.

Alternative B – Based on the total number of acres of vegetation potentially affected within the Proposed Project area, in culmination with regional impacts, this alternative would likely result in the greatest overall cumulative impacts to vegetation. The direct number of acres affected from the Proposed Project is small in relationship to all other current and future actions that could affect vegetation throughout the region.

Indirect impacts to vegetation from soil disturbance and the improved public access to portions of Cotterel Mountain could increase the potential for the establishment and spread of invasive and noxious weed species. If invasive and noxious weed species expand their range within the Proposed Project area this would result in a further downward trend in vegetation health within the region.

Alternative C – Based on the total number of acres affected, the impacts to vegetation would be the same as Alternative B, as would the regional impacts. Therefore, overall cumulative impacts to vegetation would be the same as Alternative B.

Alternative D – The total number of acres affected would be the least under this alternative. The regional impacts to vegetation would be the same as the other alternatives. Therefore, the overall cumulative impacts to vegetation within the region would be less than Alternatives B or C.

Wildlife and Special Status Animal Species

Each region of influence varies greatly between different species. For highly mobile species (birds, bats, and raptors), the region of influence for cumulative impacts would need to be analyzed throughout their entire home range, including where they migrate from and where they are migrating to. Specific data are not available regarding highly mobile wildlife species found or observed at Cotterel Mountain. This could lead to a potentially enormous scale of cumulative impacts analysis. It is not possible to define all projects and potential actions that could have a cumulative impact for the

highly mobile species of Cotterel Mountain. Therefore, a region of influence will not be defined for highly mobile species; however, cumulative effects resulting from proposed regional wind power facilities are analyzed. For the less mobile wildlife species, the region of influence is defined as Cassia County.

The majority of species represented under big game, amphibians and reptiles, small mammals, birds and bats, and raptors are generally widespread with stable populations. Mule deer and American pronghorn are ranked as demonstrably widespread, abundant, and secure throughout their entire range (Streubel 2000). Bighorn sheep and Mountain lions are not rare, and apparently secure, but with some cause for long-term concern based on Idaho conservation status ranking. Each species exists in relatively high abundance throughout its range, which includes many parts of Idaho and the West. Various resident and migratory birds, bats, amphibians, reptiles, raptors, and small mammal species use Cotterel Mountain and the surrounding region; all species are lumped into appropriate groups and analyzed within the county. If a regional project impacts a particular species individually, it is addressed.

The past and current trends of wildlife and special status animal species include mule deer populations in Idaho that have been decreasing since 1996, primarily due to habitat reduction, specifically critical winter habitat. Mountain lion population densities are usually not more than three to four animals per 40 square miles; actual densities in Cassia County are unknown. In February of 2000 and 2001 the IDFG, BLM, and The Foundation for North American Wild Sheep reintroduced 45 California bighorn sheep into the Jim Sage Mountains. The reintroduced bighorn sheep herd has since increased to about 75 individuals.

Regional trend data are not available for each species group addressed for the proposed Cotterel Mountain wind power facility. Addressing each species individually would be enormous in scope and not comply with the purposes of this section. Grassland and shrub steppe communities have been consistently degrading due to a variety of human activities, such as conversion to agricultural or urban uses, livestock grazing, recreation, and the introduction and spread of invasive species and noxious weeds. Wildlife habitat quality has been historically downsized and fragmented with large contiguous patches of exotic annual species. Downward trends in habitat availability and quality have subsequently resulted in downward trends for some species.

The future anticipated trends of wildlife and special status animal species include high quality, relatively undisturbed big game winter range as an important resource, especially those areas where human disturbance is low. The quantity and quality of winter range usually limits big game populations, so a reduction in the carrying capacity of winter range could result in permanently lowered populations. The quality of winter range is affected by the amount of human disturbance, which is in turn related to how easily people can access winter range habitat. If winter range and other big game preferred habitat types are continually being lost or converted for other uses, the long-term anticipated population trends for most big game species could be a decrease in individuals.

Scientists, in particular, are concerned about the potential cumulative impacts of wind power on species populations if the industry expands to the level expected (USGAO 2005). Many proposed wind power projects are located in areas of large species numbers, as well as migratory flyways. The USFWS and USGS are initiating some studies to capture data on migratory flyways to help determine where the most potential harm from wind power might occur and to gather data for use in assessing cumulative impacts on wildlife species from wind power facilities. As these studies are completed and more is known about the impacts of new wind power facilities, predicting future anticipated trends should be more conclusive.

Regional influences to big game include cumulative impacts to big game from regional projects that have occurred within the Cassia Creek, Raft River and Marsh Creek sub-basins. These include: construction of I-84; livestock grazing; rural development; agricultural development that removed shrub steppe habitat; wildfire and prescribed burning; construction of transmission lines; livestock water developments; mining; water channel alterations and removal of riparian vegetation; and hunting. There are also a multitude of smaller regional projects, such as feedlots, gravel pits, quarry expansions, rangeland improvement projects, livestock exclosures and geothermal exploration that contribute to cumulative impacts. Local impacts to certain wildlife species may take place at the site of each project as a result of habitat loss and disturbance.

Existing and foreseeable impacts to wildlife occurring within the Cassia Creek, Raft River and Marsh Creek sub-basins include: public access, livestock grazing; continued alteration of streams for human purposes; mining; rural development; wildfire and prescribed burning; and alteration of shrub steppe habitats. Disturbance within big game habitat on and in the vicinity of Cotterel Mountain is anticipated. Livestock use on Cotterel Mountain is anticipated to be minimally affected by the proposed actions. Mule deer use on Cotterel Mountain could be altered due to increased human access.

ITD road and bridge improvement projects in the region are anticipated to increase highway use and speed levels in the vicinity of Cotterel Mountain. Completion of these road reconstruction projects could likely result in an increase in the number of visitors to the City of Rocks area and an increase in motor vehicle speeds along this section of road. This could result in an increase in mortality to big game as a result of an increase in wildlife vehicle collisions. Indirect impacts to big game such as displacement related to noise and human disturbance, are difficult to quantify, but probably would increase the overall level of cumulative impacts to big game habitat, over the long-term.

The construction and operation of confined animal feeding operations (CAFO's; typically feedlots or dairies) are proposed in the Raft River Valley. The location and range of use would be the determining factor as to the potential impacts on big game. If these operations are built on existing stands of sagebrush or preferred big game habitat, the impacts could be slight and local.

Several other wind power projects are proposed for southern Idaho along the Snake River Plain. The size of the footprint and vicinity to preferred big game habitat would determine the level of potential impacts resulting from these projects.

Upgrades to infrastructure, such as roads and utilities, are anticipated within the region. Rangeland improvement projects, such as livestock watering tanks, fences, and cattle guards, are also expected to be constructed within the region. The subsequent impacts to big game as a result of these actions are difficult to predict. Potential impacts depend on their vicinity to big game habitat and species locations, as well as the indirect impacts that could accompany them, such as increased grazing or road use.

Amphibians and Reptiles

Regional cumulative impact to amphibian and reptile habitats and individuals include federal and state highways, primary and secondary roads, future ROW authorizations, wildfire, and vegetation management treatments. These disturbances would be expected to be scattered throughout the region, and probably would result in negligible impacts to amphibian and reptile populations. Impacts to amphibious species will be determined by the amount of riparian and wetlands habitat that is sacrificed by any of the regional projects. Increasing local roads and widening highways will increase traffic levels and may result in higher reptilian mortality due to their attraction to warm surfaces. By implementing prompt re-vegetation and appropriate habitat protection measures following construction, cumulative impacts to amphibian and reptile populations within the region would be expected to be negligible. Amphibians and reptiles could be subject to minor cumulative impacts that result from permanent land use changes that reduce available habitat and open space; however, the impacts are anticipated to be negligible.

Small Mammals

Regional cumulative impact to small mammal habitats and individuals include federal and state highways, primary and secondary roads, future ROW authorizations, and vegetation management treatments. It would be expected that these disturbances would be scattered throughout the region, and probably presents a negligible impact to small mammal populations. By implementing prompt re-vegetation and appropriate habitat protection measures following construction, cumulative impacts to small mammal populations within the region would be expected to be negligible. However, potential increased vehicle speeds and traffic in the region may increase roadway mortality of small mammals. Small mammals could be subject to minor cumulative impacts that result from permanent land use changes that reduce available habitat and open space; however, the impacts are anticipated to be negligible.

Birds and Bats

Lack of data quantifying the status of local passerine and bat populations in the area make the assessment of cumulative impacts to birds and bats difficult. Domestic cats, collisions with vehicles, buildings and windows, and communication towers each kill over one million birds every year in the

U.S. A study in 2001 showed that all of the operating wind projects in the U.S. were estimated to kill 10,000 to 40,000 birds per year (Erickson *et al.* 2001b), roughly 80 percent of which were passerines.

The level and sources of bat fatalities from human-induced causes are less well known, but bats are known to have collided with buildings and other tall structures less frequently than birds. Recent evidence indicates that wind turbines can kill bats, especially those species that migrate south for the winter. Bats are long-lived and produce few (usually one) young per year, which means that their populations could not recover as quickly from losses as could many birds that can produce many young per breeding cycle. Little is known about bat migration routes, corridors, or populations in the region. However, the number of operating wind projects is expected to increase in the future, potentially increasing cumulative impacts to birds and bats.

Raptors

It is generally assumed that regional populations of common raptors are widely distributed and stable (Olendorff 1973; Newton 1979). During spring, the Raft River Valley-Curlew National Grassland Globally Important Bird Area (GIBA) located to the east and south of the Proposed Project area contains the highest breeding population of ferruginous hawks in Idaho. Other than impacts from natural events, this population has been relatively unaffected for the past 30 years. Past and current levels of disturbance and actions have not appeared to impact productivity to a large degree within the GIBA. Raptors displaced by the Proposed Project could move to other territories if suitable unused habitat is available. Given the anticipated collision rates, local or regional cumulative impacts are expected to be negligible.

Alternative A – There would be no action under this alternative and no associated cumulative impacts.

Alternative B – Road construction and improvements associated with the Proposed Project in combination with regional impacts would contribute to cumulative impacts to wildlife and special status animals. Increased motorized travel and recreational accessibility in the region and from the Proposed Project would result in more disturbances (visual, auditory) within wildlife habitat.

Various other wind power facilities proposed in the region in combination with impacts from the Proposed Project could pose a cumulative threat to avian and bat species. Passerine and bat species could be the most impacted. The degree of collision risk to birds at wind plants appears to be species-specific, based on the results of fatality monitoring at other wind plants throughout the west. For example, fatalities of ravens, turkey vultures, and ferruginous hawks are rare, while fatalities of American kestrels, red-tailed hawks, and horned larks are more common. The siting of a wind power project in specific types of habitat and the behavior of an individual species plays a large role in its risk of collision.

This alternative could have more of a cumulative impact on avian and bat species due to the larger number of turbines across a broader landscape. The cumulative impact between the Proposed Project

and other wind power projects in the region will be dependant on the layout and design of the other projects, as well as species use, habitat types, and migration/movement corridors in relation to these sites.

Alternative C – Cumulative impacts to wildlife resulting from road and highway improvements would be the same as those described for Alternative B even though fewer roads would be constructed under this alternative and there would likely be fewer subsequent motorized vehicle impacts (disturbance and road kill).

Cumulative impacts to birds and bats resulting from various other wind proposed power projects in concert with the Proposed Project would be the same as Alternative B.

Smaller region wide projects such as feedlots, gravel pits, quarry expansions, rangeland improvement projects, livestock exclosures and geothermal exploration would have the same cumulative impact as Alternative B.

Alternative D – Cumulative impacts to wildlife associated with increased access and motorized travel resulting from the Proposed Project would be similar but less widespread than those described under either Alternative B or C because there would be fewer miles of roads constructed under this Alternative.

Cumulative impacts to birds and bats resulting from various other proposed wind power facilities would be similar to Alternative B. However, the reduced number of turbines under this alternative could reduce the cumulative impact region wide as a result of fewer collision mortalities and less destruction of suitable habitat.

Smaller region wide projects such as feedlots, gravel pits, quarry expansions, rangeland improvement projects, livestock exclosures and geothermal exploration would have the same cumulative impact as Alternative B.

Threatened or Endangered Species (Bald Eagle and Gray Wolf)

The region of influence for this section addresses general actions in the region that may have cumulative impacts on bald eagle or gray wolves. Threatened and endangered species are usually analyzed at a population-wide scale in an effort to determine if individual projects or actions will inhibit the long-term recovery of either species. Determining all actions and projects that are occurring within bald eagle and gray wolf occupied areas is outside the scope of this analysis.

The past and current trends of the bald eagle include a National Audubon Society survey in 1963 that reported only 417 active nests in the lower 48 states. In 1994, about 4,450 occupied breeding areas were reported. There has been a 47 percent increase since 1990 in the number of occupied breeding territories (USFWS 1994). The number of known occupied nesting territories in Idaho has increased from 11 in 1979 to 138 in 2000 (Beals and Melquist 2001). In 1994, the bald eagle was downlisted

from endangered to threatened status. The species is currently being considered for de-listing from the federal list of endangered and threatened wildlife (60 FR 36010).

The past and current trends of the gray wolf include a mandate by the State of Idaho as early as 1907 that sought the extermination of predators. By 1910, control efforts were coordinated among government trappers and stockmen to eliminate wolves and other predators from Idaho. Kaminski and Boss (1981) reported that U.S. Biological Survey reports indicated that the last wolves were removed from Idaho by about 1936. However, historical evidence (1905-1980) and recent wolf observations (1980-1996) demonstrate that a sparse but stable population of wolves has remained in remote, forested portions of Idaho. In 1996 gray wolves were released in the central Idaho mountains. Since 1996, the gray wolf population has grown to an estimated 500 individuals within Idaho.

The future anticipated trends of the bald eagle are that they are being evaluated for de-listing from the federal list of endangered and threatened wildlife (60 FR 36010); it is anticipated that bald eagle population numbers will continue to be stable or increasing.

The future anticipated trends of the Gray Wolf are that the gray wolf numbers and territory size in Idaho will continue to increase in numbers and size. As gray wolf populations increase in Idaho, human interaction with the species will increase as well, likely amplifying depredation issues. However, as social interactions intensify between wolves as population density increases, and at some level, social factors interact with food competition, which would reduce or prevent population growth (Packard and Mech 1980, Keith 1983, Fuller 1989). Human predation and a potential hunting season for gray wolves could help to manage the population.

Regional influences to bald eagle include several other wind power projects proposed in southern Idaho; some of these projects are located near higher densities of bald eagles. To date there has not been a documented bald eagle mortality resulting from wind power; however, constructing a facility near concentrations of bald eagles increases the potential for mortality to occur.

Proposed wind power projects located near bald eagle winter roost, nesting and foraging areas have the potential to result in cumulative impacts to bald eagles in Idaho due to higher population densities. The number, scale, and location of wind power projects will determine the level of potential impact. If several wind power projects are constructed near concentrated bald eagle forage or roost sites, the potential for adverse impacts would increase.

Windland is proposing to construct an approximately 200 MW wind energy project six to 12 miles south of American Falls. An important bald eagle communal roost site at Bowen Canyon is located one to two miles southwest of this site. Suitable bald eagle habitat does not exist at the proposed wind power location. However, bald eagles flying between the communal roost sites and potential foraging areas along the Snake River or American Falls Reservoir could pass through the proposed wind facility and would potentially be at risk of collision. If future wind power projects were developed at

relative high densities along the Snake River or other open water areas in the region, the potential for bald eagle fatalities would increase.

Other proposed county projects such as ITD road and bridge improvement projects on regional and local roadways, large CAFO's, and upgrades to infrastructure, are not anticipated to have a cumulative impact on bald eagles and gray wolves.

Alternative A – There would be no action under this alternative and no associated cumulative impacts.

Alternative B – Constructing proposed wind power facilities near concentrations of bald eagle forage or roost sites along the Snake River increases the potential for injury or mortality to occur. However, long-term regional cumulative impacts are not anticipated to inhibit the ongoing recovery and increasing populations of bald eagles in Idaho or range wide.

Alternative C – Cumulative impacts would be the same as Alternative B.

Alternative D – Cumulative impacts would be the same as Alternative B.

Greater Sage-Grouse

The region of influence for sage-grouse is Cotterel Mountain and its immediate vicinity including the Albion and Declo Hills to the north. Mt. Harrison to the west, SH-81 to the east and Cassia Creek to the south. Sage-grouse present on Cotterel Mountain and in its vicinity represent a small population with low numbers of grouse present per lek. The results of a radio telemetry study of the Cotterel Mountain grouse population indicates that these sage-grouse do not breed with sage-grouse found off of the mountain. Following the breeding season, grouse from Cotterel Mountain do travel to other sites within the region. Therefore, Cassia County will represent the region of influence for Cotterel Mountain sage-grouse to allow comparison of lek trend data within in the county.

The past and current trends of sage-grouse according to the Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats (2004), it is estimated that statewide there are 772 active leks and 5,684,900 acres of key sage-grouse habitat. It is generally assumed that regional populations of sage-grouse have been declining as a result of: habitat loss or fragmentation from invasive species; agriculture; degradation due to fire; grazing; urbanization; hunting and poaching; predation; disease; weather; accidents; herbicides; and physical disturbance (Connelly *et al.* 2004).

In Idaho, recent sage-grouse population trends show an estimated statewide decline of 40 percent from the long-term average (IDFG 1998). The average number of chicks produced per hen has declined by 40 to 50 percent in many areas (Connelly *et al.* 2004). On Cotterel Mountain, three years of monitoring has revealed that at least six sage-grouse leks are currently active or occasionally active (Reynolds 2005). In 2003, the estimated population of sage-grouse on Cotterel Mountain was approximately 70 birds (TBR 2004). Within the Proposed Project area and its vicinity, lek attendance

trends over the last ten years have not changed. For the ten years prior to this period, there were declining lek attendance trends.

The future anticipated trends of sage-grouse are that if current levels of habitat loss occur into the future across the entire western sage-grouse habitat range, populations are anticipated to maintain the current declining levels in Idaho and throughout the West.

Regional influences to cumulative impacts on sage-grouse could occur through: increased loss or alteration of habitat; increased access; agriculture; urbanization; hunting and poaching; predation; disease; herbicides; land exchanges, as well as the development of energy resources. Past and present uses of the Proposed Project site and surrounding areas have altered vegetative composition and community dynamics (fire frequency and severity, soil structure and function, nutrient cycling, etc.) or converted sagebrush communities to agriculture or development purposes, resulting in loss of habitat.

Historic events that have impacted sage-grouse in the Proposed Project area and its vicinity include: conversion of native vegetation to agriculture; wildfire; prescribed burns; construction of I-84; construction of county, state, federal, and other local roads; livestock grazing, water development, and fencing on private or public lands; rural development; construction of electrical transmission lines; construction of natural gas and gasoline pipelines; mining; water channel alterations; irrigation channels and laterals; drought; hunting; and disease.

The continuing loss and fragmentation of sagebrush habitat in the region has reduced the number of potential sites where sage-grouse are found; therefore, impacts to the remaining sage-grouse populations are multiplied when occupied habitat is affected. Future actions that continue this trend would result in a reduced population of sage-grouse. An extended discussion of these events can be found in the Conservation Plan for the Greater Sage-Grouse in Idaho (2005).

ITD road and bridge improvement projects on regional and local roadways are not anticipated to have an additive impact on regional Greater sage-grouse habitat or population trends.

The construction and operation of large CAFO's (8,000-10,000 head of livestock per feedlot or dairy) are proposed in the Raft River Valley. The location and range of use would be the determining factor as to the subsequent potential impacts on sage-grouse. If these operations are built on existing stands of sagebrush they could add to the overall loss of potential sage-grouse habitat.

As with all other wildlife species, there is a concern regarding the cumulative impact on sage-grouse resulting from the construction of wind power facilities. Currently, there are several other wind power projects proposed for southern Idaho along the Snake River Plain. The site specific location of these facilities with regard to sage-grouse habitat and leks would determine the potential level of impact at the local scale. Ongoing displacement of sage-grouse across the region could lead to less lek availability and attendance, ultimately resulting in reduced sage-grouse reproduction. Ongoing

monitoring and studies would be required as these facilities come online to determine the potential level of the regional impact to sage-grouse.

Upgrades to infrastructure, such as roads and utilities, are anticipated and rangeland improvement projects such as, livestock watering tanks, fences, and cattle guards, are expected to be constructed within the region. The subsequent impacts to sage-grouse as a result of these actions are difficult to predict. Potential impacts depend on their vicinity to sage-grouse habitat and species locations, as well as the indirect impacts that could accompany them, such as increased grazing, road use, or human presence.

Alternative A – There would be no action under this alternative and no associated cumulative impacts.

Alternative B – This alternative would result in the largest project footprint, it is estimated that sage-grouse could potentially be displaced from about 26,644 acres of potentially suitable habitat in the Proposed Project area. This displacement from potentially suitable habitat would represent less than one-half of one percent (0.5%) loss to the total estimated acres of suitable sage-grouse habitat statewide.

The construction of the Proposed Project alone would result in only a small loss of sage-grouse habitat statewide. However, the construction of the Proposed Project, in conjunction with the development of other wind energy, land conversion, or other projects or actions that result in the degradation or removal of sage-grouse habitat could result in adverse cumulative impacts to sage-grouse in the region.

Alternative C – Cumulative impacts are anticipated to be the same as Alternative B.

Alternative D – The types of cumulative impacts are anticipated to be the same as Alternative B; however, under this alternative there are the fewest proposed turbines and the smallest project footprint. The reduced footprint size would avoid two known active sage-grouse lek sites on the southern reach of Cotterel Mountain, resulting in less potential for cumulative impacts to sage-grouse than under Alternatives B and C.

Historical and Cultural Resources

The region of influence for historical and cultural resources is the Raft River Region of the Snake River Plain.

The past and current trends of historical and cultural resources cannot be quantified because most of the region has not been inventoried for cultural resources. There is potential for cultural resource occurrence in unsurveyed areas, but until surveys are completed, the presence and/or significance of resources and their cumulative impacts cannot be determined.

The future anticipated trends of historical and cultural resources are human activities associated with population growth, which could potentially increase all types of recreational and development-related activities resulting in disturbed cultural resources.

Regional influences include past projects or planned projects in the area that would result in ground disturbance that could potentially impact identified and unidentified prehistoric or historic sites, as well as cause impacts on traditional cultural properties. If surveys were conducted prior to construction of these projects, the location of these resources would be identified so impacts could be avoided to the extent possible. Implementation of mitigation programs in each individual project should help to limit project-specific impacts, therefore reducing overall cumulative impacts on cultural resources.

Cumulative effects on cultural resources can occur through natural erosion and weathering of lands containing archaeological sites.

Surface disturbing activities associated with regional population growth and the resulting development would adversely affect cultural resources on non-federal lands. In addition to surface disturbing activities, increased recreation use would result in more human use in areas that could support cultural resources. This would result in an increase in the likelihood of cultural resources being disturbed.

Increased demand for surface disturbing activities, such as road and utility ROW on federal land, require cultural resource inventories prior to authorizing the activity. These inventories should reduce the impacts to cultural resources in the region. The loss of native vegetation, and changing viewshed could also have adverse impacts on traditional cultural properties.

Alternative A – There would be no action under this alternative and no cumulative impacts.

Alternative B – Cumulative impacts to historical and cultural resources from regional projects and the Proposed Project may include the disturbance and loss of unidentified cultural resources that could add to knowledge about past use of the area. An increase in visitation to these areas may result in vandalism to archaeological resources. Gains in scientific knowledge through the discovery of new sites identified by construction and maintenance crews and the general public due to an expected increase in visitation to the area, would add to the cumulative impact.

Alternative C – Under Alternative C the potential cumulative impacts to cultural resources would be the same as under alternative B.

Alternative D – The potential cumulative impacts to cultural resources would be less than those potentially occurring under Alternative B or C. Under Alternative D no turbines would be sited along the east ridgeline of Cotterel Mountain and no road improvements would occur in this area. Because of this, there would likely be less visitation to east ridgeline portion of Cotterel Mountain reducing the

potential for vandalism to archaeological resources in this area. However, there would be fewer opportunities for gains in scientific knowledge through the discovery of new sites due to the smaller footprint.

Lands & Realty

The region of influence for lands and realty is a polygon with its northern most point located at Minidoka Dam. From there, a straight line to the peak of North Chapin Mountain defines the northeastern boarder. Moving further south, the eastern boundary is defined by a straight line between North Chapin Mountain and Black Pine Peak. Black Pine Peak is the furthest southern point. A straight line between Black Pine Peak and Jim Sage Mountain Peak defines the southern boundary. A straight line between Jim Sage Mountain Peak and the town of Burley defines the southwestern boundary. Finally, the polygon is defined along its northwestern edge by a straight line between the town of Burley and the Minidoka Dam.

This area was selected because structures and activities associated with the operation and/or construction of the Proposed Project would likely be visible by the casual observer. The perception of the Proposed Project by resident landowners, in concert with other projects in the region, could have incremental impacts to property values within the region. Outside the region, the Proposed Project would not likely be noticeable by the casual observer and would have no impact to land and realty values.

The past and current trends of land and realty include the number of land use authorizations, particularly ROW and permits that have a function of demand for these uses. ROW and permits have generally been issued for recreation, transmission lines, and mineral use. Rights of way have been granted for two utility operators (Bonneville Power Administration and Raft River Rural Electric Cooperative, Inc.) within the region who each operate electrical transmission lines. The USFS has issued a long-term recreational use permit for Pomerelle Mountain Resort where ski lifts, trails, and associated facilities are maintained. There has been a demand for mineral use in the region for building material. The BLM has provided use permits to meet this demand and is currently evaluating additional mineral use permits.

The future anticipated trends are that conditions within the region are not anticipated to change drastically. About 60% of the new residents of Cassia County are expected to settle in or around one of the established communities in the next few years. The bulk of the remainder of the new residents are expected to seek housing in the areas along the Snake River and in "Country Living" environments in the rural areas of the county (Cassia County Comprehensive Plan 1992). The small community of Albion will likely experience limited growth in population.

County planners in the region will continue to evaluate industrial and commercial project proposals as efforts to diversify the economy continue. Increased development of Burley and construction of small-scale structures elsewhere within the region are anticipated.

Several factors influence lands and realty within the region. The three primary factors are ownership, land use, and monetary value. These factors are interrelated and are best considered in a relational context. Ownership within the region is distributed among private, state, and Federal interests. In general, private lands are contiguous along the flatter, more arable areas. Federal lands are scattered across the steeper areas. State lands are isolated and scattered throughout the region.

Ownership and land use are related in that private lands are generally utilized for agriculture, and residential development. Within the region of influence, agriculture is the dominant use of land by private interests; however, rural development is anticipated to increase in the future. Federal and state lands are utilized by the public for various resource benefits, such as livestock grazing, mining, recreation, and wildlife habitat.

The value of privately held real estate fluctuates in part based on its intrinsic properties and the condition of adjacent parcels. As land use within the region changes from agricultural to rural residential, the monetary value of privately held lands will likely increase. Privately held parcels that are adjacent to public lands may be of greater monetary value due to the proximity of resources available. For example, private parcels that have easy access to public lands may have easy access to recreational uses such as hunting. This condition may affect the value of privately held real estate conversely. For example, real estate values adjacent to public land may be adversely affected by resource extraction activities that the property owner does not financially benefit from (e.g., right-of-way development, mining operations, timber harvest).

Alternative A – There would be no action under this alternative and no cumulative impacts to lands and realty.

Alternative B – There could be some impact to the value of residential properties based on visual aesthetics. This impact would be adverse if residents, or potential residents who would purchase a home, found viewing the wind turbines and rotors to be disagreeable. Residential property in and around the communities of Malta and Albion would likely experience alterations of visual aesthetics associated with their properties. The Proposed Project would impact the view that some landowners currently experience from their property over the long-term. Other unassociated foreseeable projects in the region would not likely contribute cumulatively to the alteration of visual aesthetics experienced by local property owners.

There could be cumulative short-term impacts to residential property in terms of noise experienced from increased traffic from industrial construction vehicles used to complete the Proposed Project and other foreseeable projects within the region. Impacts associated with increased traffic would be temporary, ceasing after construction is completed.

Alternative C – The impact to the value of property based on alteration of visual aesthetics would be similar but less widespread than under Alternative B. There would be 32 to 49 fewer turbines

constructed under this alternative. Overall, turbines associated with the Proposed Project under this alternative would be less visible than under Alternative B.

Cumulative short-term impacts from the noise that residential property owners experience would be similar but of shorter duration than those described under Alternative B because there would be less construction associated with the Proposed Project.

Alternative D – The impact to the value of residential property based on alteration of visual aesthetics would be similar but less widespread than under either Alternative B or C. There would be 48 to 64 fewer turbines constructed under this alternative compared to Alternative B. Cumulative impacts from turbines associated with the Proposed Project under this alternative would be less visible than either Alternative B or C.

Short-term cumulative impacts from the noise that residential property owners experience would be similar but of shorter duration than those described under either Alternative B or C due to less construction.

Livestock Grazing

The region of influence for livestock grazing impacts would include both Cassia and Minidoka Counties. Impacts associated with livestock grazing are primarily socio-economic; therefore, it is reasonable to identify this as the region of influence for cumulative impacts.

The past and current trends of livestock grazing started with grazing in and around the Albion area as early as 1836 (Gibbs 1976; Townsend 1839). Reoccurring drought conditions combined with severe overuse resulted in degraded range conditions in the early part of the century (Vale 1975). However, improved range management and incorporation of grazing systems has improved range conditions over time (Vale 1975). Currently, livestock grazing on public lands in the region is monitored and managed under the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, in accordance with 43 CFR 4180.2(b). Livestock grazing is also present on state, private, and other lands in the region. However, the number of publicly grazed acres is greater than all of these combined.

The Albion Valley and Pomerelle Mountain Resort, combined with the City of Rocks are sought after rural recreation areas in the region. The demand for land associated with recreation along with rural residential, and commercial property development is expected to increase over time. Impacts to vegetation and other livestock grazing resources from land development and recreation needs, including expanded transportation corridors, are likely to increase. As these types of resource uses increase, private and public needs are likely to shift.

Regional influences to livestock grazing include increased recreational, residential, and commercial land uses in Cassia and Minidoka Counties, which would likely shift resource needs. The overall

effects of these changes could result in long-term reductions in livestock use of public lands in the region.

The increased population growth resulting in increased use of public lands in surrounding communities could lead to more human caused wildfires (Peters and Bunting 1992), escalated dispersal of invasive species and noxious weeds (Sheley *et al* 1999), and increased degradation of native plant communities, including special status plant species (Jones 2000). In the absence of intensive restoration, the overall conditions within and adjacent to the region could decline appreciably, resulting in reduced available forage and potential grazing restrictions/exclusions related to reduced rangeland health.

Alternative A – The overall impacts to livestock grazing on public lands from regional influences would be consistent under all four alternatives. However, the Proposed Project would not be constructed under this alternative and there would be no cumulative impacts to livestock grazing on public lands.

Alternative B – Based on the total number of acres potentially affected under this alternative, in addition to regional impact, this alternative would result in the most cumulative impacts to livestock grazing on public lands. However, based on construction-related mitigations and current and future grazing restrictions throughout the region, the cumulative impacts to livestock grazing would be slight.

Alternative C – The cumulative impacts to livestock grazing on public lands within the Proposed Project area would be the same as Alternative B.

Alternative D – The type of impacts to livestock grazing on public lands would be the same as Alternative B, as would the impacts in the region. However, the number of acres affected by construction activities under this alternative would be less and the overall cumulative impacts to livestock grazing on public lands would be less than Alternative B.

Socioeconomics

The region of influence for the analysis of socioeconomic cumulative impacts will include Cassia and Minidoka counties, combined. This region was selected because the Proposed Project is located within these counties and the majority of induced and indirect social and economic impacts would occur there. Past, present, and future projects could have an incremental impact on social and economic conditions within the region. Social and economic impacts that occur as a result of projects, or actions outside of the region of influence would not likely affect social and economic conditions within Cassia and Minidoka counties to a greater degree than other parts of Idaho.

For a description of past and current trends within the region, please refer back the detailed socioeconomic discussion in Sections 3.5.1 through 3.5.6 of this document.

Future anticipated trends include population and land use within the region, which will likely change in accordance with recent trends throughout the western U.S. The abundance of recreational opportunities and relatively inexpensive real estate make the region attractive for rural development. The community of Albion will likely experience limited population growth and will likely become a more important community for visitors to the area to obtain lodging, supplies, and food. The Albion economy will rely less on agriculture as it expands its service-based economy. However, agriculture will remain the dominant industry throughout the region. County planners in the region will continue to evaluate industrial and commercial project proposals as efforts to diversify the local economy. Increased development of Burley and construction of small-scale structures elsewhere within the region are anticipated.

Regional influences include projects that employ local residents and increase the viability of the local economy. Generally, unemployment decreases, the ripple effect creates additional jobs and income, and the tax base is increased. It is likely that many of the foreseeable projects within the region would increase local employment to some degree, however the measurable effect is unknown because the number of available jobs and the proportion of locals that would be employed is unknown.

The largest sectors of the economy in the region are currently associated with manufacturing, agriculture (including fishing and hunting), and retail trade (see Table 3.5-4). Closure of the J.R. Simplot food processing facility in 2004 increased the unemployment rate of the region. It is unknown if the foreseeable future projects would result in any measurable cumulative impacts to social and economic conditions when considered with the Proposed Project. Trends within the region may result in an increase in property values and more rural development. The construction of the Proposed Project would not likely impact property values (ECONorthwest 2002).

Alternative A – There would be no action under this alternative and no associated cumulative impacts.

Alternative B – Operation of the Proposed Project would increase the tax revenue that Cassia Joint School District No. 151 receives annually. As a result, the State of Idaho would remove financial support that is currently provided to the School District and it would replace these funds through the state property tax replacement system. The funds previously earmarked by the state for the financial assistance of Cassia Joint School District No. 151 may become available for financial assistance of other school districts in the region. Overall, this would have a positive cumulative impact to school districts in the State of Idaho (Times News 2004).

Alternative C – Under Alternative C, the amount of tax revenue collected by Cassia County would be similar to Alternative B and the cumulative impacts would be similar.

Alternative D – Under Alternative D, the accrued tax revenue for Cassia County would be less than under Alternatives B and C and the cumulative impact to regional school districts would be similar but less than those described under Alternative B.

Recreation

The region of influence that is considered for the analysis of cumulative impacts to recreation is Cassia County. This region of influence was selected for because the Proposed Project area is contained completely within Cassia County and the majority of recreation activities that are similar to those available at the Proposed Project site are concentrated in Cassia County.

Projects within the region contribute to the quality and opportunity for recreation potentially causing recreational activities to be substituted or relocated to other areas. Impacts from the Proposed Project would be so dispersed that recreational quality and opportunity would not likely be affected.

The past and current trends of recreation have shown that many recreational local users reside in the town of Burley. Areas developed primarily for recreational purposes within the region include the City of Rocks National Reserve, The City of Rocks Backcountry Byway, and Pomerelle Mountain Resort. The region offers a relatively diverse spectrum of recreational opportunities.

Nationwide the popularity of OHV use has been increasing (Motorcycle Industry Council 2003). A representative increase in off-highway motorcycle and OHV use is expected at the regional level. Past road and trail building activities, and the development of other recreational amenities have contributed to increased opportunities for access in the region with a corresponding reduction in opportunities for solitude.

The future anticipated trend is that the demand for all types of recreational experience is expected to increase. This trend will be fueled in part by anticipated growth in the region. A transition in land use of the Albion Valley and Snake River area from agricultural to rural residential may reduce some types of hunting opportunities in specific areas. The demand for hunting grounds will continue to be met by federal, state, and private landowners. Pomerelle Mountain Resort will likely meet developed winter recreation demand. Recreational opportunities are anticipated to remain diverse within the region.

Regional influences on recreation are tied primarily to land use by humans. The general agricultural and rural nature of the area lends itself to opportunities for solitude and quiet. The region has always been mostly rural, except for the town of Burley, which is suburban.

The need for irrigation by farmers in the region has led to the development of reservoirs and lakes. Nearby Lake Walcott, Milner Reservoir and Lower Goose Creek Reservoir provide fishing and boating opportunities. Hunting continues to be a valued recreational opportunity and bird sanctuaries and wildlife refuges within the region provide opportunities for wildlife viewing.

Livestock grazing continues to be a primary land use on rangelands in the region. Rangeland improvement projects and the presence of livestock have some influence on the types of recreational experiences that occur in the region.

Alternative A – There would be no action under this alternative and no associated cumulative impacts.

Alternative B – Road construction and improvements associated with the Proposed Project would contribute cumulatively to impacts from road improvements going on throughout the region. The result would be an overall increase in accessibility opportunities for motorized travel. Motorized recreational opportunities within the Proposed Project area would increase as motorized travel within the region increases. The quality of non-motorized recreational experiences would be adversely impacted where increased accessibility to motorized vehicles resulted in more noise, and less opportunity for solitude. The opportunity for semi-primitive motorized recreation would decrease, with a corresponding increase in opportunities for roaded natural recreation opportunities.

During periods of high use, the campgrounds at the City of Rocks National Reserve are often full. Visitors that do not obtain a campsite may search for appropriate dispersed camping sites within the region, including Cotterel Mountain. Road improvements within the Proposed Project area may attract additional campers if they are not bothered by the presence of the wind turbines. Campers who are bothered by the presence of wind turbines would likely seek dispersed camping opportunities elsewhere, such as other adjacent public lands or choose to stay at hotels available in either Albion, Malta, Almo, or Burley.

Alternative C – Cumulative impacts associated with increased access and motorized travel resulting from the Proposed Project would be less than those described under Alternative B because there would be fewer miles of roads constructed under this alternative.

Increased accessibility for motorized vehicles within the Proposed Project area would have impacts on dispersed camping opportunities similar to those described under Alternative B. There would also be slightly more areas available for dispersed camping under this alternative.

Alternative D – Cumulative impacts associated with increased access and motorized travel resulting from the Proposed Project would be similar but less widespread than those described under either Alternative B or C because there would be fewer miles of roads constructed under this alternative.

Increased accessibility for motorized vehicles within the Proposed Project area would have impacts on dispersed camping opportunities similar to those described under Alternative B. Compared to Alternatives B and C, there would be slightly more areas available for dispersed camping.

Visual Resources

The region of influence for visual resources is based on the Proposed Project being observable to varying degrees depending on three factors of perspective: elevation, aspect, and distance. The Proposed Project would be visible from the north and east at greater distances than the south and west due to the relatively flat Snake River Plain. Regions to the west and south of the Proposed Project area are generally more mountainous than areas northward, with greater obstacles in the line of sight.

This trend is the basis for selection of the region of influence, which extends beyond the Snake River Plain into southern portions of Minidoka, Blaine, and western portions of Power County. The Raft River Valley, including the western slopes of the Sublett and Black Pine Mountain Ranges are included. West of the Proposed Project area it includes Albion Valley and eastern slopes of Mount Harrison. The southern extent would take in northern slopes of Jim Sage Mountains, but areas beyond Jim Sage Mountains have geological features that obstruct the line-of-site. This area was selected because structures and activities associated with the operation and/or construction of the Proposed Project would likely be visible by the casual observer.

The past and current trends of visual quality in the region have been impacted by small-scale construction projects of residential, commercial, and industrial nature. Visual quality is worse today than it has been in the past due to construction of these facilities; however, overall character of the landscape has been retained.

Trends within the region are towards slow development of infrastructure. Land use patterns have been traditionally agricultural and remain so today. Structures are sparse across the landscape. When they do occur, they tend to be clumped together such as the communities of Burley or Albion. Infrastructure tends to follow straight north-south lines across this landscape due to orientation of the ridges and valleys.

Existing structures within the region that impact visual resources include SH-81, I-84, and numerous other small roads. Homes and ranches are scattered throughout the region, as well. An existing north-south electrical transmission line is also seen on the west side of SH-81 along with a proliferation of cellular telephone towers and other types of communication facilities, which are seen throughout the region.

The future anticipated trends for visual resources include an overall growth in population in the region and associated infrastructure, which will lead to long-term cumulative impacts to visual resources.

Visual resources within the region are influenced by the conversion of agricultural land to rural residential and commercial development. The density of structures across the landscape will increase over time in the region. Recent construction of a cheese factory in the region has led to an increase in the demand for local dairy. As a result, the potential construction and operation of new dairies on the landscape will influence the visual landscape within the region. Livestock grazing activities continue to influence the visual landscape within the region, including construction and maintenance of fences, cattle guards, and water troughs.

Alternative A – There would be no action under this alternative and no associated cumulative impacts to visual resources.

Alternative B – Several other wind power projects are proposed for southern Idaho along the Snake River Plain. If these projects were constructed, wind turbines would become a more common sight in southern Idaho. Residents and frequent visitors to the region could view the turbines of one or more wind power projects in a single day. They would likely experience repetitive views of wind turbines through their local travels over a period of time. Consequently, some local residents and those traveling through the area might perceive a change to the overall character of the Snake River Plain landscape.

Road construction and operation would contribute to cumulative impacts to visual quality within the region over the long-term. New roads would be visible from the southwest portion of the region of influence. Other roads proposed in the region would contribute to cumulative impacts to visual resources.

Construction and operation of transmission interconnect lines associated with the Proposed Project would increase the visibility of these types of structures. Existing transmission lines within the area have already impacted visual resources. The transmission lines associated with this alternative would be shorter than either Alternative C or D. The transmission lines proposed under this alternative would not parallel any of the existing ones.

Alternative C – Construction of other wind projects currently proposed for southern Idaho along the Snake River Plain would have the same impact as those described under Alternative B. The wind turbines would be slightly less visible because there would be 32 to 49 fewer turbines constructed under this alternative contributing less to the cumulative impacts to visual resources than Alternative B.

Cumulative impacts to visual resources from road construction would be less than those described under Alternative B because there would be fewer miles of new road constructed under this alternative.

Transmission interconnect lines associated with this alternative would contribute less to cumulative impacts than those described under Alternative B because they would parallel an existing north-south transmission line, although the proposed transmission lines would be longer.

Alternative D – Construction of other wind projects currently proposed for southern Idaho along the Snake River Plain would have the same impacts as those described under Alternative B. The wind turbines would be less visible under this alternative than either Alternative B or C because there would be 48 to 64 fewer turbines constructed.

Cumulative impacts to visual resources from road construction would be less than those described under Alternative B or C, because there would be fewer miles of new road constructed under this alternative.

Cumulative impacts to visual resources from the construction and operation of transmission interconnect lines associated with this alternative would be the same as those described under Alternative C.

Fire Management

Cumulative impacts to fire management capabilities are not anticipated because the potential for ignitions, surface fuel alteration, or safety hazards would not change outside the Project Area as a result of the proposed project. Past projects within the proposed project area have not affected fire management capabilities to date and future foreseeable actions are not anticipated to have cumulative impacts on the ability to suppress fire outside the Proposed Project Area.

4.18 UNAVOIDABLE ADVERSE EFFECTS

The Proposed Project design features, BMP, and compensatory off-site/mitigation would avoid or minimize many of the potential adverse effects. However, not all adverse effects can be avoided, nor would mitigation be 100 percent effective in remediating all impacts. There would be at least a minimal amount of unavoidable adverse impact on all resources present in the Proposed Project area for at least a short time, due to the presence of equipment and humans in the area and the time necessary for restoration to be effective. Unavoidable impacts associated with the Proposed Project would include:

- Soil compaction for road construction.
- Loss of vegetation.
- Loss of mule deer winter range.
- Potential impacts to birds and bats.
- Potential impacts to sage-grouse and their habitat.
- Loss of livestock forage.
- Changes to the viewshed of the Cotterel Mountain ridgeline from siting wind turbines and construction of roads.
- Visual alternation of the nighttime environment due to turbine lighting.
- Potential loss of aerial fire fighting options along the Cotterel Mountain ridgeline.

4.19 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

An irreversible and irretrievable impact is defined as a permanent reduction or loss of a resource that once lost cannot be regained. Most energy development projects, such as gas, oil, or coal fire plants, result in an irreversible and irretrievable commitment of the power-generating resources (fuel). Wind is a renewable resource that would not be depleted or altered by the Proposed Project and could offset the need to consume fossil fuels.

The loss of productivity (e.g., forage, wildlife habitat) from lands used for the siting of the Proposed Project features (turbines, roads, substations) would be an irreversible and irretrievable commitment of habitat resources for wildlife species, such as sage-grouse, dependent upon mature shrub-steppe

plant communities. These vegetation communities may take 20 to 40 years or more to recover following decommissioning of the Proposed Project. Therefore, the majority of the land disturbed by the Proposed Project would not be returned to useful production for up to 50 to 70 years, if the Proposed Project does not go beyond 30 years.

There would be an irreversible and irretrievable commitment of the energy used during manufacture of the turbine and other Proposed Project components as well as during construction, drilling, production, and restoration associated with the Proposed Project. Foundations or other facilities greater than six inches below ground surface would be permanent and abandoned in place. They cannot be recovered due to practical or economic considerations and they would be irreversibly and irretrievably committed.

The Project and Project area are subject to a number of federal, state, and local laws, regulations, and executive orders. The Project area is also subject to a number of federal, state, and local laws, regulations, and executive orders. The Project area is also subject to a number of federal, state, and local laws, regulations, and executive orders.

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4.12 PROJECT AREA AND PROJECT AREA

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CHAPTER 5

CONSULTATION AND COORDINATION

5.0 CONSULTATION AND COORDINATION

The Cotterel Mountain Wind Power Project is being proposed on public lands primarily managed by the Burley Field Office of the Idaho Bureau of Land Management (BLM). However, a variety of other organizations, agencies and people maintain an interest in the area or use the area for specific purposes. These include, but are not limited to: Idaho Department of Fish and Game (IDFG); U.S. Fish and Wildlife Service (USFWS); Idaho Department of Lands (IDL); Cassia County; the Shoshone-Bannock Tribes; the Shoshone-Paiute Tribes; communications site rights-of-way holders; Bonneville Power Administration (BPA); Minidoka County; the Bureau of Reclamation; Idaho Power; and certain grazing permittees. BLM established a coordinated effort for participation in the analysis process by:

- Inviting USFWS, IDFG, and BPA to cooperate in the preparation of this document;
- Through organizing an the Interagency Wind Energy Task Team (IWETT);
- Through formal consultation with the Tribes;
- Through contacting, meeting with and providing information to various groups and local governments; and
- By seeking the active participation of the public and existing permittees in the scoping process and throughout the analysis process.

This chapter addresses the consultation and coordination that has taken place, in both an informal and formal setting, with the Shoshone-Bannock Tribes, the Shoshone-Paiute Tribes, federal, state and local government, interest groups and the general public.

5.1 SPECIFIC CONSULTATION ACTIONS

5.1.1 Formal and Informal Government-to-Government Consultation with Tribes

During the initial public scoping period, a meeting was held on January 16, 2003 with the Shoshone-Bannock Land Use Policy Commission (Commission) to provide information on the Proposed Project, answer questions, and solicit Tribal input. During that meeting, it was suggested by the Commission that the Proposed Project be presented to the Tribal Business Council (Council). A meeting was subsequently scheduled and held with the Council on March 12, 2003. Prior to the start of the public scoping period, Mike Heckler of Windland, Inc. (Windland) met with Delbert Farmer, a former Council member, as well as Diane Yupe and LaRea Buckskin of the Heritage Tribal Office (HETO) to provide information on the Proposed Project. Members of the Tribal Environmental Staff attended a field tour of the Proposed Project area on September 22, 2003 and comments on the Proposed Project were received by the BLM in a letter dated October 17, 2003. Subsequent to the formation of the BLM, Twin Falls District on October 1, 2004, formal consultation was initiated with the Shoshone-Paiute Tribes through the Wings and Roots Program Native American Campfire on October 29, 2004. The Wings and Roots Program is the formal consultation process used by the Tribes and the BLM. Since that date, the Burley Field Office Staff along with the Twin Falls District Manager have participated in consultation through the Wings and Roots process on December 2, 2004, January 20, 2005, February 23, 2005, March 16, 2005, June 30, 2005, July 28, 2005, September

1, 2005, and December 8, 2005. Participants representing the Shoshone-Paiute Tribes have been Terry Gibson, Ted Howard, Emmett Hall and Tim Dykstra. Douglas McConnaughey has facilitated the Wings and Roots meetings. Table 5.1-1 lists chronologically meetings and consultation with the Shoshone-Bannock and the Shoshone-Paiute Tribes.

Table 5.1-1. Consultation with the Shoshone-Bannock and the Shoshone-Paiute Tribes.

Date	Type of Contact
July 8, 2002	Informational meeting between Windland; Delbert Farmer, former Council member; and Diane Yupe and LaRea Buckskin of HETO
January 16, 2003	Meeting between the BLM and the Shoshone-Bannock Land Use Policy Commission
March 12, 2003	Meeting between the BLM and the Tribal Business Council
September 22, 2003	Field tour of the Proposed Project area
October 17, 2003	Letter from the Shoshone-Bannock Tribes commenting on the Proposed Project
February 3, 2004 March 9, 2004 April 6, 2004 May 11, 2004	Meetings with Shoshone-Bannock Land Use Policy Commission
April 15, 2004	Formal Consultation with Fort Hall Tribal Business Council
June 8, 2004	Meeting with Tribal Environmental Staff
October 29, 2004 December 2, 2004 January 20, 2005 February 23, 2005 March 16, 2006 June 30, 2005 July 28, 2005 September 1, 2005 December 8, 2005	Formal Consultation between the BLM and the Shoshone-Paiute Tribes (Wings and Roots)
December 10, 2004 June 9, 2005	Meetings between the BLM and the Shoshone-Bannock Tribal Environmental Staff
July 11, 2005	Field tour of the Proposed Project area with Shoshone-Paiute Tribal Cultural Resource Representative Ted Howard.
February 22, 2006	Formal Consultation between the BLM and the Shoshone-Paiute Tribes (Wings and Roots)

5.1.2 Intergovernmental (State and Local) and Interest Group Coordination

Members of state, county, and city governments and interest groups were contacted about the Proposed Project and invited to comment. In response, the IDL and IDFG submitted comment letters to the BLM identifying their preliminary concerns through the public scoping process. In addition, comment letters were received from the Western Watersheds Project, Advocates for the West, Land and Water Fund of the Rockies, Idaho Conservation League, Prairie Falcon Audubon Society and the Sierra Club, Sawtooth Group. Table 5.1-2 documents chronologically consultation with state, county, and city governments and other interest groups.

Initial public scoping was conducted to help identify issues to be addressed in developing a full range of alternatives. Prior to the publication of the Notice of Intent (NOI) in the Federal Register, BLM agency representatives, at the request of local interest groups, provided preliminary information on the Proposed Project and answered questions. These groups included: IDFG; the Albion Joint Management Association; the Cassia County Public Lands Committee; the Mini-Cassia Chamber of Commerce; the Burley Lions Club; the Cassia County Commissioners; and the Upper Snake River District Resource Advisory Council (RAC). This pre-National Environmental Policy Act (NEPA) planning process facilitated a free-flow exchange of ideas, and a chance to educate interested and involved parties on wind as an energy resource and the trade-offs in terms of consequences to the environment as opposed to benefits from power generation. Consultation and project updates continued with these groups and others subsequent to the publication of the NOI and the beginning of the NEPA process. Additional groups and governments involved in the process were: the Cities of Albion, Malta, Declo and Burley; the Rotary Club; the Cassia Soil and Water Conservation Group; the C-Plan Committee; the North and South Cotterel Grazing Associations; and the Twin Falls District RAC.

5.1.3 Resource Advisory Council (RAC)

Resource Advisory Councils are advisory boards established by the Governor of Idaho to coordinate with the BLM and provide input on important issues. A RAC consists of members of the public; each representing one or more of the many resources the BLM manages. Early on in this analysis process, the Upper Snake River District RAC was presented with the Proposed Project and invited to participate in the analysis. They were first introduced to the project at a RAC meeting on November 19, 2002 where they were given a presentation on the proposal and information was shared. They were given project updates periodically until the Burley Field Office became part of the new Twin Falls District on October 1, 2004, at which time the new Twin Falls District RAC became involved. They in turn were presented with the Proposed Project and invited to participate at a RAC meeting on November 9, 2004. They have been periodically updated and have attended project site tours.

5.1.4 Cassia County Public Lands Committee

The Cassia County Public Lands Committee is a local working group that expressed an interest in the Proposed Project. The committee is somewhat unique being one of only two such committees in the State of Idaho. It is comprised of citizens and local county officials that have varying interests in Federal actions and public lands. They meet regularly with the BLM and the U.S. Forest Service to discuss and provide input on the important issues that affect public lands within Cassia County. This group has also been presented with project updates throughout the analysis process.

5.1.5 Congressional Staffs

Local Congressional Staffs were briefed on the Proposed Project by Field Office Manager, Theresa Hanley at a meeting in Twin Falls in December of 2002. Members of the Burley Field Office Staff also briefed the BLM Acting State Director, along with several members of his staff on the project in October of 2002, and obtained their concurrence for the necessity for the preparation of a Resource

Management Plan amendment and Environmental Impact Statement (EIS) for the Proposed Project. Wendy Reynolds, the Field Office Manager for the Burley Field Office, conducted a briefing and on-site tour of the proposed Cotterel Mountain Proposed Project area with congressional representatives, Heather Teal, Linda Culver and Mike Matthews on August 23, 2004. A briefing of Congressional Staffers was completed on December 14, 2005.

Table 5.1-2. Consultation with State, County, and City Government.

Date	Type of Contact
June 25, 2002	BLM and Windland give a presentation on the Proposed Project to the Mini-Cassia Chamber of Commerce
August 20, 2002	Sensitive species information request to the IDFG Conservation Data Center
August 22, 2002	URS Group, Inc. (URS) and Windland hold meeting with the IDFG Magic Valley Region Staff to disclose the features of the Proposed Project
September 27, 2002	BLM and Windland give a presentation to the Burley Lion's Club
November 19, 2002	Upper Snake River District RAC Mtg. (presentation on Proposed Project)
December of 2002	Local Congressional Staffs were briefed by BLM Field Office Manager, Theresa Hanley
January 7, 2002	Scoping comments from Idaho Department of Lands
February 3, 2003	IDFG attendance at agency scoping meeting
February 10, 2003	BLM gives a project briefing to the South Cotterel Grazing Association
February 11, 2003	BLM contacts Mayors and/or City Councils of Malta, Declo and Burley to consult on the Proposed Project
February 19, 2003	BLM gives a project briefing to the North Cotterel Grazing Association
February 21, 2003	Scoping comment letter from IDFG
February 25, 2003	BLM and Windland give a presentation to the Albion City Council
February 27, 2003	Resource Advisory Council Meeting (project update)
April 11, 2003	BLM updates IDFG on the Proposed Project
May 1, 2003	IDFG participates in a field tour with BLM and USFWS
August 20, 2003	IDFG attendance at Interdisciplinary team Proposed Project area field trip
November 24, 2003	Resource Advisory Council Meeting (project update)
January 12, 2004	BLM updates IDFG on Proposed Project
January 13, 2004	BLM briefs C-Plan Committee on Proposed Project
January 27, 2004	IDL and Cassia County Commissioners invited to be cooperating agencies, IDFG invited to be a participating agency
February 25, 2004	Resource Advisory Council Meeting (project update)
March 22, 2004	Cassia County Commissioners Meeting (project update)
April 26, 2004	Cassia County Commissioners Meeting (project update)
May 20, 2004	Resource Advisory Council Meeting (project update)
July 16, 2004	BLM conducts field tour for Cassia County Public Lands Committee
October 25, 2004	Cassia County Commissioners Meeting (project update)
October 26, 2004	BLM gives a presentation to the Burley Rotary Club
November 9, 2004	Twin Falls District Resource Advisory Council Meeting (presentation on Proposed Project)
December 8, 2004	Cassia Count Public Lands Committee (project update)
January 18, 2005	C-Plan Briefing
February 9, 2005	Cassia Count Public Lands Committee (project update)

Table 5.1-2. Consultation with State, County, and City Government.

Date	Type of Contact
March 28, 2005	Cassia County Commissioners (project update)
May 17, 2005	Resource Advisory Council Presentation
July 19, 2005	Resource Advisory Council (field tour)
August 9, 2005	Resource Advisory Council Presentation
October 12, 2005	Cassia Count Public Lands Committee (project update)
November 29, 2005	Resource Advisory Council (project update)
December 20, 2005	Cassia County Commissioners briefing

5.1.6 Consultation with Federal Agencies

The USFWS supplied a comment letter during the public scoping process. A scoping meeting specific to wildlife issues was held with the USFWS, with IDFG present, at the BLM Burley Field office on February 3, 2003. Representatives from the USFWS also attended an interdisciplinary resource team field trip to the Proposed Project area on August 20, 2003. Table 5.1-3 lists chronologically the consultation completed with Federal Agencies.

The BLM and USFWS operate under an interagency agreement in a cooperative approach to fish and wildlife management. The BLM enters into consultation with the USFWS pursuant to Section 7 of the *Endangered Species Act of 1973, as amended*. The consultation process includes both “informal” and “formal” consultation. A biological evaluation process is used by these agencies to identify which listed or proposed species could be affected by the proposed action, to evaluate the possible effects, and to determine if formal consultation is required. Because of the presence of bald eagle known to use the Proposed Project area, formal consultation is being conducted with the USFWS and a Biological Assessment is being prepared relative to the bald eagle. A Biological Opinion based on the findings in the Biological Assessment will be issued by the USFWS and made a part of the Record of Decision of this analysis.

Table 5.1-3. Consultation with Federal Agencies.

Date	Type of Contact
August 20, 2002	URS requests project specific species list from USFWS
September 20, 2002	URS and Windland held meeting with USFWS Eastern Idaho Field Office, Chubbuck, Idaho to disclose the features of the Proposed Project
September 27, 2002	BLM received project specific species list from USFWS
November 11, 2002	BLM requested revised project species list from USFWS
December 5, 2002	BLM received revised project specific species list from USFWS
December 16, 2002	BLM sends letter to USFWS to initiate consultation on the Proposed Project
January 2, 2003	BLM receipt of letter from USFWS providing clarification on the necessity for a biological assessment
February 3, 2003	USFWS attendance at agency scoping meeting
May 1, 2003	USFWS participates in a field tour of the Proposed Project area with BLM and IDFG

Table 5.1-3. Consultation with Federal Agencies.

Date	Type of Contact
August 20, 2003	USFWS attendance at interdisciplinary team Proposed Project area field trip
November 12, 2003	BLM and Windland consult with BPA regarding power transmission interconnection issues
January 27, 2004	USFWS and BPA invited to be cooperating agencies
May 19, 2004	USFWS attends coordination meeting with BLM
July 14, 2004	BLM gives tour of Proposed Project area to Jeff Foss, USFWS
September 10, 2004	USFWS participates in an interagency coordination meeting with BLM, IDFG and representatives of Windland and Shell WindEnergy, Inc.
November 18, 2004	BLM and Windland meet with Bureau of Reclamation (BOR) to consult on possible power transmission line routing across BOR lands
July 22, 2005	Bonneville Power Administration (field tour and briefing)

5.1.7 Interagency Wind Energy Task Team (IWETT)

Following an interagency coordination meeting with BLM, IDFG, USFWS and representatives from Windland, Inc. and Shell WindEnergy, Inc., the IWETT was formed consisting of members from BLM, IDFG, USFWS and URS Group, Inc. The IWETT was chartered to assist in the Proposed Project analysis process as described below:

- Review baseline technical wildlife reports and data and identify additional data needs, if appropriate;
- Assist and contribute to the development of mitigation measures;
- Assist and contribute to the development of adaptive management strategies;
- Assist with development and/or further enhancement of a range of alternatives;
- Provide technical input for the environment consequences (impacts) section of the Draft EIS; and
- Define what constitutes an adequate project-monitoring program.

The IWETT met eight times over the course of several months to address these issues and assignments. Table 5.1-4 lists a chronology of IWETT coordination and consultation.

Table 5.1-4. Interagency Wind Energy Task Team Consultation.

Date	Event
October 15, 2004	IWETT Meeting #1
October 20, 2004	IWETT Meeting #2
October 28, 2004	IWETT Meeting #3
November 22, 2004	IWETT Meeting #4
December 2, 2004	IWETT Meeting #5
December 14, 2004	IWETT Meeting #6
December 21, 2004	IWETT Meeting #7
March 29, 2005	IWETT Meeting #8

5.1.8 Initial Public Scoping-Mailing List

At the beginning of the project a mailing list was developed to send out project publications to individuals, organizations, and agencies. The mailing list included names and addresses from the lead agency, BLM existing mailing lists, potentially affected federal, state and local agencies, organizations, Tribes, and other interested private parties. This mailing list had approximately 115 interested parties. During the course of the project analysis, the mailing list has grown to include approximately 250 interested parties.

The initial mailing list was used to include interested parties during the course of the project through newsletters. A Public Scoping Notice Newsletter was prepared and mailed on December 19, 2002. The Notice invited the public to participate in the scoping process and to comment on the planning criteria. A BLM mailing address and email address were provided in the scoping newsletter with a pre-addressed comment form, for the public to send into the BLM with comments on the Proposed Project. This first Newsletter served to inform the recipients of the public scoping process for the preparation of the Draft EIS and Land Use Plan Amendment and the scheduled scoping meetings for the Proposed Project. It also included background information on the Proposed Project, the purpose and need for the proposed action, and preliminary resource issues.

A second newsletter was published and mailed in July of 2003. This newsletter provided an update on the progress of the EIS process, studies that had been completed, and an updated schedule.

5.1.9 Public Scoping Meetings

Public scoping meetings were held in Albion, Idaho on January 7, in Burley, Idaho on January 8, and in Boise, Idaho on January 9, of 2003. A total of 135 individuals attended the three meetings.

The scoping meetings were held in an "Open House" format and featured informal, one-on-one question and answer interactions by BLM and URS interdisciplinary resource team members. Representatives of Windland were also on hand to answer technical questions about the Proposed Project. Attendees signed a registration sheet as they entered the room. The interdisciplinary resource team members then escorted attendees to stations set up around the room. At each station were display boards with information about the Proposed Project. Information presented on the display boards included; resource issues; planning criteria; Proposed Project design; visual simulations; equipment diagrams; and an initial proposed schedule for completing the planning process. Attendees were encouraged to provide written comments and questions on the Proposed Project on provided forms and leave them at the meeting or mail them to the BLM. Table 5.1-5 lists the agencies, groups and individuals who responded during the scoping process.

Table 5.1-5. Agencies, Groups and Individuals Who Responded During the Scoping Process.

Agencies	
Federal	State of Idaho
U.S. Fish and Wildlife Service	Idaho Department of Lands
	Idaho Department of Fish and Wildlife
Citizens Groups	
Advocates for the West	Idaho Conservation League
Renewable Northwest Project	Western Watersheds Project
NW Energy Coalition	Prairie Falcon Audubon Society
Land and Water Fund of the Rockies	Sierra Club, Sawtooth Group
Individuals	
Bennie Smyer	Kent Klosterman
Bill Eastlake	Kevin A. Larson
Bob Bean	Len F. Marrs
Bob Bronson	Leo Bell
C.H. Nellis	LeRoy Jarolimek
Candiodo Pena	Mark Grigg
Charles R. Ward	Mark Iverson
Curtis E. Cannell	Mark Ohrenschall
Curtis Richins	Mr. & Mrs. Bruce Bristol
David Westfall	Nick Rokich
Dean Richins	Norman Anderson
Dean Sullivan	Norman Dayley
Donald Dean	Philip Wheeler
Fran Allans	Robert Blurton
Gale R. Ward	Ryan Hawthor
Harry R. Badger	Tammy Lien
Jack Enterkine	The Chatburn Family
Janet Powers	Thomas Bacon
Jay L. Black	Thomas C. Ward
Jim Powers	Tom Geary
Jon Fillmore	Victoria Francis
Jon P. Fillmore	
Julie Kreiensiecu	
Karl Simonson	
Keith Amende	
Kelly Adams	

5.2 DRAFT EIS COMMENTS AND RESPONSES

On July 1, 2005, a Notice of Availability (NOA) was published in the Federal Register and the Draft EIS was made available to the public. The publishing of the NOA in the Federal Register marked the beginning of the 90-day public comment period on the Draft EIS. During the comment period, interested parties were invited to submit comments on the Draft EIS to the BLM. Public meetings were held to describe the content of the Draft EIS and to receive comments in a public forum. Meetings were held on July 26, 2005 at the Burley High School, located in Burley, Idaho, on July 27, 2005 at the Marsh Creek Event Center located in Albion, Idaho, and on July 28, 2005 at Boise High School located in Boise, Idaho. The Final EIS incorporates revisions to the Draft EIS made in response to comments submitted during the 90-day public comment period. During the public comment period 72 written comments were received by the BLM via comment forms, mail, email, and facsimile. The comments received during the comment period and responses to the comments are provided in Appendix H of this Final EIS.

5.3 LIST OF PREPARERS

Personnel contacted or consulted during preparation of this Final EIS are listed in Table 5.3-1. The list of preparers and participants is given in Table 5.3-2.

Table 5.3-1. Personnel Contacted or Consulted for the Cotterel Wind Power Project.

Agency or Organization	Name	Position
Bureau of Land Management		
Burley Field Office	Ken Miller	Burley Field Office Manager (October 2005-Present)
	Wendy Reynolds	Burley Field Office Manager (July, 2003 –September 2005)
	Bernie Jansen	Acting Burley Field Office Manager (March 2003 – July 2003)
	Theresa Hanley	Burley Field Office Manager (Nov 1999 – March 2003)
	Scott D. Barker	Project Manager
	Kenneth Knowles	Environmental Protection Specialist
	Peggy Bartels	Wildlife Biologist
	John C. Lytle	Archeologist
	Felicia Burkhardt	GIS Coordinator
	Elena Shaw	Rangeland Management Specialist/Lead
	Nancy Ady	Rangeland Management Specialist
	Dennis Thompson	Outdoor Recreation Planner
	Jim Tharp	Natural Resource Specialist
	Bill Rice	Civil Engineer
	Steve Davis	Hydrologist
	Forrest Griggs	Geologist

Table 5.3-1. Personnel Contacted or Consulted for the Cotterel Wind Power Project.

Agency or Organization	Name	Position
Upper Snake River District (now known as the Idaho Falls District)	Joe Kraayenbrink	Upper Snake River District Manager
	David Howell	Public Affairs Specialist
	Kathe Rhodes	Environmental Coordinator
Twin Falls District	Howard Hedrick	Twin Falls District Manager
	Paul Oakes	Planning and Environmental Coordinator
	Sky Buffat	Public Affairs
Idaho State Office	Kurt Kotter	Associate State Director
	Susan Giannettino	Deputy State Director Resource Services Division
	John Augsburger	Wildlife Biologist
	Signe Sather-Blair	Wildlife Biologist
	John Martin	Economist
	Jack G. Peterson	Sr. Program Manager Renewable Energy Programs
	Gary Wyke	Planning Coordinator
Washington Office 350	Tom Hurshman	National Project Manager
	Ray Brady	National Program Lead
U.S. Fish and Wildlife Service	Sandi Arena	Wildlife Biologist
	Deb Mignogno	Supervisor Eastern Idaho Field Office
	Mark Robertson	Boise Office
	Jeff Foss	Boise Office
	Dr. Benjamin Tuggle	Washington Office
	Steve Bouffard	Refuge Manager Minidoka Refuge
Idaho Department of Fish and Game	Mike McDonald	Environmental Staff Biologist Magic Valley Region
	David Parrish	Magic Valley Regional Supervisor
	Bruce Haak	Non-Game Biologist Southwest Region
	Randy Smith	Biologist Magic Valley Region
	Greg Servheen	Biologist Boise Office
	Tracy Trent	Supervisor Boise Office

Table 5.3-2. List of Preparers and Participants for the Cotterel Wind Power Project.

Name	Education/Experience	Final EIS Responsibility
BLM Interdisciplinary Team		
Scott D. Barker	BS Forest Management 31 Years Experience	Project Management Team Leader Visual Resources
Ken Miller	BS Natural Resource Conservation 25 Years Experience	Burley Field Office Manager (October 2005 –Present)
Wendy Reynolds	15 Years Experience	Burley Field Office Manager (July, 2003 –September 2005)
Bernie Jansen	BS Range Science, Jun 1967 30+ Years Experience	Acting Burley Field Office Manager (March 2003 – July 2003)
Theresa Hanley	BA/MA Anthropology 15 Years Experience	Burley Office Field Manager (Nov 1999 – March 2003)
Paul Oakes	BA Biology 33 Years Experience	Planning/NEPA Coordination
Kathe Rhodes	Retired	NEPA Coordination
Peggy Bartels	BS/MS Wildlife Biology 9 Years Experience	Wildlife Biology
John C. Lytle	BA/MA Anthropology 28 Years Experience	Cultural Resources
Kenneth Knowles	BS Conservation/Biology MS Range Management 30 Years Experience	Hazardous Materials and Noxious Weeds
Elena Shaw	BS Range Science 22 Years Experience	Rangeland Resources
Nancy Ady	BS Range & Animal Science BS Horticulture 10 Years Experience	Rangeland Resources
Dennis Thompson	15 Years Experience	Recreation, Visual Resources
John Augsburg	BS Wildlife Management MS Wildlife Science 31 Years Experience	Wildlife Biology
Bill Rice	37 Years Experience (Retired)	Engineering
Steve Davis	BS Zoology (Fisheries & Wildlife) 20 Years Exper.	Hydrology
Forrest Griggs	BS Geology 4 Years Experience	Geology
John Martin	MS Agricultural and Natural Resources Economics 30 Years Experience	Socio-Economics
Jim Tharp	BS Wildlife Management 17 Years Experience	Natural Resource Specialist/ Ecologist

Table 5.3-2. List of Preparers and Participants for the Cotterel Wind Power Project.

Name	Education/Experience	Final EIS Responsibility
David Howell	BA- Mass Communications M. Ed.- Educational Studies 15 years experience	Public Affairs
Sky Buffat	BA Mass Communications 5 Years Experience	Public Affairs
URS Corporation		
Aaron English	BS Wildlife Biology 14Years Experience	Project Manager
Suzy Cavanagh	MS Geology 8 Years Experience	Geology, Soils, Hydrology
Brandt Elwell	MS Forestry/BS Geography 11 Years Experience	GIS Analyst, Vegetation, Visual Resources
Dautis Pearson	BA General Biology 22 Years Experience.	Land Use, Recreation, Visual Resources,
Mike Kelly	BA/MA Anthropology 24 Years Experience	Cultural Resources
Sarah McDaniels	BA International Studies MA Anthropology 5 Years Experience	Cultural Resources
Bridget Canty	BS Biology 9 Years Experience	Avian Resources
Katie Carroz	MA Economics 6 Years Experience	Socioeconomics
Lisa Gates	BS Geographic Information Management 10 Years Experience	Hazardous Materials
Kavi Koleini	BS Environmental Science 7 Years Experience	Visual Resources Fire Management
Jarod Blades	BS Environmental Science 7 Years Experience	Wildlife Resources Biological Assessment
Sandra Steele	BBA Management 17 Years Experience	Document Production, Coordination, Quality Assurance
Dave Schwarz	PhD. Geology 15 Years Experience	Quality Assurance, Technical Editing, Visual Resources
Charles Baun	MS Natural Resource Management BS Biology/Chemistry 8 Years Experience	Avian Database Management, Vegetation, Wildlife Resources
T.R.E.C Inc.		
Tim Reynolds	Ph.D. Zoology 30 Years Experience	Avian Survey Lead
Cameron Collins	MS Wildlife Biology 10 Years Experience	Sage Grouse Radio Telemetry and Lek Surveys

Table 5.3-2. List of Preparers and Participants for the Cotterel Wind Power Project.

Name	Education/Experience	Final EIS Responsibility
Kent Fothergill	BS Biology 20 Years Experience	Avian Surveys
Visual Genesis		
Jason Pfaff	BS Landscape Architecture 11 Years Experience	Visual Resources
Ted Bierman	BS Cartography 4 Years Experience	Visual Resources
ABR Inc		
Brian Cooper	MS Biology 20 Years Experience	Radar Surveys
Maul Foster Alongi		
Lynn Sharp	BA Biology MS Zoology 30 Years Experience	Avian and Wildlife Resources

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CHAPTER 6

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6.1 REFERENCES

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